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VOL. LV, N. S. VOL. 8 SEPTEMBER, 1919. No. 6

KEEP THE STANDARDS UP.

While we are not aware at this time that the question of educational standards is to form a topic for discussion at the coming annual meeting of the Association, it would be well to bear in mind that the progress being made in the field of veterinary science, in its different branches, as well as in animal husbandry, demands higher educational standards than those obtaining in the past; and the future will no doubt require even higher, if the profession is to obtain and maintain the position it ought to occupy, and the usefulness which will be demanded of it.

The education and accomplishments which were thought good enough, and seemed to serve their purpose, in days gone by, fall short of present-day necessities, and for future demands are likely to be more or less obsolete and inadequate.

The writer was much impressed by some statements, along this line, in an article by Dean Eugene Davenport, of the University of Illinois, in a recent number of the *Breeder's Gazette*, when referring to a proposed veterinary college in connection with the University.

Among other things, Dean Davenport says:

"Nothing is clearer than that a new era is at hand in respect to education and research within the field of veterinary science. Recent discoveries have thrown new light on the causes of diseases in animals and man, and while they have made treatment more rational than heretofore, they have vastly complicated the subject as a whole. Because of this, the old-time methods and materials of instruction have rapidly become antiquated, and any college which now undertakes to prepare practitioners in this field must be equipped with the best of apparatus and the most skilled of instructors if it is to meet the demands which the public rightfully makes.

"Contemporaneous with this increased knowledge of animal diseases has come a sweeping change in the field of effort; that is to say, modern veterinary science aims at the control of animal diseases and their prevention, rather than at the cure of a few individuals which have become afflicted. This again is a more complicated matter, in that the field of study is much broadened, and involves many more considerations than heretofore.

"This change in subject matter and in objective has resulted in a closing up of many of the earlier schools in veterinary medicine, and for no other reason than that the research and instruction which new conditions seemed to require laid a burden and expense upon the organizations which they could not meet. This is only another way of saying that instruction in this field is now absolutely tied to investigation, and that the two together are vastly more expensive than in the older days when the only object was to diagnose the illness of individual animals and prescribe a standard cure."

In a recent address before the American Society for Clinical Investigation, Dr. Graham Lusk, of New York, in referring to the conditions of some of the medical schools in the earlier days, makes the statement,

"These were the days when there appeared to be no future for clinical science, days in which there was almost no intellectual, social, or financial influence making for its welfare. And yet we in this country, since that time, have made great headway in this direction, not on account of the influence of any special men, but because the principle that the primary mission of a medical school 'to take some part in the advance of true medical knowledge, and not merely to diffuse what is already known,' is everlastingly right."

And he further states:

"In this great land of ours, which is overflowing with opportunity and abundance, it is of very special importance to elevate our intellectual standards. Many scientific men hardly seem to realize the heavy world responsibilities which have been placed upon us."

We have quoted somewhat freely from these two men of broad vision in order to emphasize our point in connection with the elevation of our educational standards. If it is considered necessary by the medical profession to elevate intellectual standards in the interest of humanity, *per se,* it seems just as essential that the standards of medical science as applied to the lower creatures should be kept up, not alone for economic reasons, but because the veterinary profession plays a very important part in the conservation of the public health through the control and eradication of those diseases which are transmissible from animals to man. So that besides, or in addition to, the personal or more selfish ends to be subserved, it should be remembered that the profession is the servant of the public, through whom it maintains its existence, and in order to meet the public's ever-increasing demand for better and more effective service, it will be necessary that our educational standards keep pace with the more modern requirements, and the "greater responsibilities placed upon us." Therefore, we say, "Keep the standards up."

THE JOURNAL: PERSONAL OWNERSHIP.

So far the Editor has had no special reason to complain of lack of contributed material for the upkeep of THE JOURNAL, but he is sometimes led to feel that there must be a great deal of valuable copy that ought to be received for publication, but which, evidently, fails to reach the editorial sanctum.

With the numerous and valuable papers presented at the various state association meetings throughout the year by members, who are also members of the A. V. M. A., and of which THE JOURNAL is the official organ, one would think that there never ought to be a scarcity of this particular class of material for publication. Also, with so many veterinary institutions throughout the country, the personnel of each being mainly composed of members of the Association, a plenitude of clinical reports should be forthcoming each month to supply readers with matters of interest and instruction in that particular department. And, further, there is the vast number of members in private practice who, amongst them, could furnish most valuable data for fellow practitioners, etc. Consequently, with such a large membership in the A. V. M. A., engaged in different branches of the profession, to draw upon, one is led to think that THE JOURNAL

should never suffer from, even the possibility of, a shortage of material for its pages. And while, to repeat, such a condition of affairs has not actually occurred thus far, the copy in hand to fill up the various departments, more particularly after the proceedings of the previous annual meeting have been used up, occasionally gets to a point which gives the editor more or less concern with reference to subsequent issues.

We have given this matter a good deal of thought and have tried to reason out, with so much material to draw upon, why more copy is not submitted by members of the Association for publication in their official organ, and we have reached the conclusion that one, if not the main, reason is, that members fail to realize that THE JOURNAL is not an independent privately-owned publication, but is the property of the American Veterinary Medical Association, each individual member having a personal ownership in it, and, therefore, ought by right to feel a certain responsibility in aiding the editor in trying to make it the success we all would wish to see it as the official organ, and worthy, of the largest veterinary organization extant.

We cannot but believe, however, that if each member would get this personal-ownership-idea, he would view the upkeep of his Journal from an entirely different standpoint, and would realize that a certain amount of responsibility rests with him, so far as its ultimate success is concerned.

Members of the Association, THE JOURNAL is ours, individually and collectively. Therefore, let each and all of us contribute to its usefulness, in its various departments, as a scientific and practical aid to the veterinary profession in general.

We feel that it should be unnecessary for us to have to make an appeal of this kind; and we do not believe it would be, if every member would assume the correct attitude toward THE JOURNAL, which, in reality, is his own property. However, as we are about to commence a new Volume, we felt we might be pardoned for drawing attention to the matter at this particular time.

EDITOR'S NOTE: Owing to conditions brought about by the late war, and the changes of location of many members of the Association and subscribers to THE JOURNAL who were in the Army Veterinary Service, it was to have been expected that irregularities would occur with regard to the delivery of the pub-

lication. However, now that matters have assumed a more normal condition, with more permanent addresses being established, it is to be hoped the irregularities spoken of will be largely eliminated.

In order to effect more immediate delivery of THE JOURNAL in the case of those who have not been receiving it regularly, the Editor has three suggestions to make, viz:

1st. That all communications concerning changes of addresses, or non-delivery of THE JOURNAL, should be sent direct to the office of the publication, Baton Rouge, La., and not to the Secretary of the Association in Chicago.

2nd. In order that requests may be met, and the following month's issue of THE JOURNAL sent to the newer address, all such communications should be received at the office in Baton Rouge, La., not later than the 15th of the month.

3rd. When giving a new address, the old one should always be mentioned.

ROBERT LOUIS STEVENSON ON HEREDITY.

"Our conscious years are but a moment in the history of the elements that build us. . . . And though today I am only a man of letters, either tradition errs or I was present when there landed at St. Andrews a French barber-surgeon to tend the health and the beard of the great Cardinal Beaton; I have shaken a spear in the Debatable Land and shouted the slogan of the Elliots; I was present when a skipper, plying from Dundee, smuggled Jacobites to France after the '15. . . . . Yes, parts of me have seen life, and met adventures, and sometimes met them well. And, away in the still cloudier past, the threads that make me up can be traced by fancy into the bosoms of thousands and millions of ascendants: Picts who rallied round Macbeth and the old (and highly preferable) system of descent by females, fliers from before the legions of Agricola, marchers in the Pannonian morasses, star-gazers on Chaldean plateaus."

Dr. Geo. H. Berns of Brooklyn was elected President in June of the Alumni Association of the New York State Veterinary College at New York University.

A PRELIMINARY NOTE ON A NEW COCCIDIUM OF RABBITS.

E. A. Bruce, Agassiz, B. C.

Without entering into the controversy as to whether the common coccidia of the rabbit's liver and intestine are one and the same species or not (*E. stiedæ; E. perforans*), it may be said that another coccidium has been found in British Columbia.

PATHOGENESIS.

Affects the intestinal tract. Is especially pathogenic for very young rabbits, often causing the loss of a whole litter. Mature animals are affected but appear to suffer no ill effects, and may carry coccidia for several months. Fatal cases may or may not be preceded by diarrhœa. Once diarrhœa is established death usually follows in 24 hours. Three cases have been seen in which infection was mixed, *E. stiedæ* being present as well as the coccidium under consideration.

THE PARASITE.

The life cycle may be completed in as short a time as five days. Oocysts kept in 3½% pot. bichromate were infective six months after being passed.

The endogenous forms have not as yet been fully worked over, the following remarks therefore apply to parasites found in the fæces. The oocysts, generally oval, vary greatly in size from 11.62 μ to 24.90 μ in width, and from 15.77 μ to 39.84 μ in length. The oocyst wall is thick, and in the larger specimens is of a well marked pinkish-orange colour. Many show an excess of material comprising the outer wall; this may show at any part, even extending down the whole length of the cyst and projecting outwards for several microns, but is commonest towards the narrow end, where a large micropyle is present.

The oocyst contains in addition to the four dizoic spores characteristic of the genus *Eimeria*, a very well marked globular residual body composed of a large number of granules. This residual body is seen as soon as sporoblast formation begins, and is as large or larger than the individual sporoblasts; it is absolutely spherical and retains its shape until the sporozoites are

formed when it sometimes disintegrates, the granules being scattered around the sporocysts.

The sporocysts contain a well-marked residuum.

The nucleus of the sporozite is a delicate pink.

SUMMARY.

This coccidium of the genus *Eimeria* which is especially pathogenic for young rabbits, differs from previously described forms: In the extreme variation of the size of its oocysts, the pinkish-orange colour of its larger oocysts, the excessive formation of material for the oocyst wall, the pink colour of its sporozite nucleus, and the presence of a very well marked globular residual body.

A series of drawings covering the exogenous forms is now ready, but publication of the same is being deferred pending a completion of a study of the whole life cycle.

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ON THE LIFE HISTORY OF THE LUNGWORM.

Dictyocaulus filaria, in Sheep.

[Preliminary Report.]

JOHN E. GUBERLET.

Contribution from Parasitological Laboratory of the Oklahoma Agricultural Experiment Station, Stillwater, Oklahoma.

Some investigations on the lungworms in sheep are being carried on in this laboratory in which the principal facts in the life history of *Dictyocaulus filaria* (Rudolphi) have been determined. The investigations are as yet incomplete and further work is in progress. It seems, however, that a report of the results thus far obtained would be desirable. It is expected that a more complete report will be made at a later date.

Herms and Freeborn (1916 and 1917) reported upon the symptoms and methods of treatment for lungworms in sheep, goats and other domesticated animals. They also considered some factors in regard to the development of these parasites. Von Linden (1915) (after Herms and Freeborn) in reporting upon the free-living stages of larval lungworms stated that there are two types of embryos. One type is adapted to a free-living stage outside the body of the host and is later supposed to be

capable of infesting a new host. The other type is unable to do so but is supposed to grow to maturity within the body of the original host. This belief was partly confirmed by Herms and Freeborn (1916) but was later rejected by them (1917). Neither of the above writers was able to bring about an experimental infection.

During the course of the investigations carried on here some facts were observed in connection with the development of the larval worms and the method by which they leave the body of the host, also the method by which they gain entrance to a new host.

The writer wishes to express his appreciation to Dr. L. L. Lewis of the Veterinary Department, Oklahoma Agricultural College, Stillwater, for advice, many valuable suggestions and criticisms which he has so kindly offered during the course of this work.

METHODS BY WHICH EGGS AND EMBRYOS LEAVE THE BODY.

The eggs of *Dictyocaulus filaria* are extruded into the air passages of the lungs and are carried up through the trachea to the pharnyx with the muco-purulent discharge which accompanies them. They are then swallowed and pass from the body through the alimentary canal. Some eggs leave the body in the muco-purulent discharge through the nostrils, but these are probably very limited in number. The writer has made more than two hundred miscroscopic examinations of smears from the nasal discharges of sheep which were heavily infested with lungworms and a total of only six or seven eggs were found. From the same sheep numerous larvæ were observed in the feces upon microscopic examinations of the mucus in the trachea and bronchi and of the feces. In making examinations of the mucus of the trachea and pharnyx only one free larva was observed while numerous eggs were present. Several eggs were observed in the esophagus. Herms and Freeborn (1917: 866) state that eggs can be demonstrated in the contents of the small intestine throughout its entire length but that they are absent in the large intestine and feces. That seems to indicate that the eggs may hatch in the large intestine since the embryos can be demonstrated very readily in the feces.

The eggs that leave the host by way of the nostrils or mouth may hatch and develop into larvæ capable of bringing about infestation in another host if deposited in favorable conditions.

DEVELOPMENT OF EMBRYOS.

The development of the embryos of *Dictyocaulus filaria* is similar in most respects to that of the stomach worm (*Hæmonchus contortus*) as shown by Ransom (1906). The females of *D. filaria* are oviviparous and therefore deposit eggs containing active and well developed larvæ. The eggs extruded by the worms, or taken from their uteri, hatch in 24 to 36 hours at a temperature of 16° to 20° C., when placed in tap water, pond water, normal saline solution or moist soil. Only a very few of the eggs hatch when placed in dust. Those that do hatch die within a short time. Larvæ taken from feces also die in a few hours when placed in dust. The newly-hatched embryos are of the oxyuriform type with a tubercle having three chitinous lips or teeth at the anterior end. The larvæ are from 350 μ to 375 μ in length and appear to be of only one type, contrary to the report of Von Linden, who states that there are two types.

The embryos placed in water, moist soil or droppings make a rapid growth, reaching a maximum length of from 490 μ to 600 μ, during which they molt at least twice. The first molt takes place in from two and one-half to five days. Most of the larvæ cast their skins in four or five days. Some, however, retain this skin or sheath. The second molt takes place in seven to ten days. Apparently a few of the worms cast the skin of this molt also. Some of the embryos retain the skins of both molts while most of them retain only that of the second which serves as a protective sheath. Those which cast the skin of the second molt develop a third sheath which acts as a protection. In this protective sheath the larval worms can withstand drought and cold. The sheath is apparently sealed at both ends to prevent excessive loss of moisture by evaporation.

As soon as the embryos reach the second molt they migrate onto upright objects. In the experiments in the laboratory they migrated onto small clods, blades of grass and up the sides of the glass dishes and onto the under side of the lids of the containers in which they were kept. The migrations took place when the air in the dish or bell jar was saturated with moisture. As soon as the air became less humid the larval worms coiled up wherever they happened to be. When conditions became moist again they continued their migrations upward on the blades of grass or on the glass. When the embryos became dry they shrank within the sheath leaving some space between their body and the protective sheath.

RESISTANCE OF EMBRYOS.

The embryos of lungworms before developing to the sheathed stage show but little resistance to dryness. After developing the protective sheath they show remarkable resistance to adverse conditions. Some sheathed embryos in normal saline solution, others in pond water, and still others in moist soil, were frozen solid for a period of ten or twelve days and when thawed out they were active and seemed to suffer no injury. They were later repeatedly frozen and thawed for several days without material injury. Some embryos which were reared in moist soil until they had developed their protective sheaths were then allowed to dry. These larval worms have been in a thoroughly dried state for a period of nearly five months and some are still alive. Upon examination they appear lifeless and completely dried and are shrunken within the sheath, but when placed in moisture they show signs of life in about fifteen or twenty minutes. In the course of one-half to three-quarters of an hour they are active.

A number of sheathed embryos were preserved for study. They were killed by dropping them into boiling 70% alcohol and 10% glycerine and some were observed to be still active at the end of nearly three hours.

Some larval worms have been kept alive in normal saline solution and in pond water for a period of over three months. Others in moist soil and upon blades of grass have been kept alive in the laboratory between five and six months, the period of time over which the experiments have been conducted.

EXPERIMENTAL INFESTATION OF LAMBS.

Two lambs were used for experimental purposes and were inoculated with the sheathed embryos of *Dictyocaulus filaria*. Both lambs were free from lungworms as shown by repeated microscopic examinations of their feces. These were kept in thoroughly disinfected pens and care was taken that their food was not contaminated in any way.

The first lamb was given between six and seven hundred embryos on January 25th. These were given in gelatine capsules through the mouth directly into the stomach, followed by a small amount of water from a bottle. Fecal examinations were made every four days. The lamb showed some symptoms of infestation on February 18 and 20 when it sneezed a great deal and had several very severe fits of coughing, the cough being of that husky nature which is typical in sheep infested with lungworms.

The sneezing and coughing continued at intervals with mucopurulent nasal discharges until the animal was killed. On March 4 larval lungworms were first observed in the feces. The embryos were then observed in the feces almost daily until the lamb was slaughtered on March 21.

The post-mortem examination showed the lungs very badly congested, especially at the extremities of the lobes. One hundred and seventy-five worms were taken from the air spaces and congested areas of the lungs. The majority of the immature worms appeared in the air passages immediately adjoining the congested regions. Many also were found within the solid areas. Undoubtedly, a considerable number of worms were left in the lungs unobserved, as they were in the minute air spaces in the congested areas and could not be detected. Many of the worms were mature while the others were more or less immature.

The second lamb was given five or six hundred sheathed embryos on April 18 and 19. These were given in capsules directly into the stomach as in the first lamb. Fecal examinations were made every four days. The lamb first showed symptoms of infestation on May 10th, when it did some sneezing and had a very severe fit of coughing. The sneezing, coughing and nasal discharges were then observed almost daily until the lamb was killed. Larval worms were first observed in the feces on June 1, when they appeared in large numbers. Numerous embryos were then observed daily until the lamb was slaughtered on June 11.

On post-mortem examination it was found that the extremities of the lobes of the lungs were badly congested. The anterior lobe of the right lung had partly atrophied and was not functional, which undoubtedly was the result of the severe congestion. Nearly two hundred worms were taken from the air passages and congested areas of the lungs. Some of the worms were mature while the others were nearly so.

Post-mortem examinations were made on several lambs taken from the same flock during and immediately following the period of these experiments and in no case was there any indication of lungworm infestation.

The results of these experimental infections showed that the worms reach maturity, or the egg-producing stage, in from five to six or seven weeks after being ingested by the sheep. The method by which they pass from the alimentary canal to the lungs is still a matter of conjecture. They undoubtedly burrow

through the lining of the stomach or intestines and enter the lungs either through the blood stream or through the lymphatics. Experiments are under way in an attempt to clear up this point.

METHOD OF GAINING ENTRANCE TO THE HOST.

The larval lungworms are passed from the infested sheep with the feces. If deposited under favorable conditions of temperature and moisture they will molt and develop to the ensheathed infectious stage in about eight or ten days. In low swampy lands where there is sufficient moisture and humidity so that the air is saturated and the vegetation becomes wet, the ensheathed embryos migrate onto the blades of grass and other vegetation where they are eaten by grazing sheep or other suitable host animals. The larval worms then migrate to the lungs where they complete their development.

Ponds and stagnant pools are probably not of great importance as a direct source of infection because the embryos sink to the bottom and remain there unless carried to the surface by currents, or by stirring the water. However, in real shallow pools some worms may gain entrance to sheep from this source. Ponds undoubtedly play a more important part in an indirect way in that they provide moisture and a more or less humid and saturated atmosphere which is a favorable environment for the development of larval lungworms.

SUMMARY OF LIFE HISTORY.

The life history of *Dictyocaulus filaria* may be summarized in the following manner:

1. The eggs are extruded into the air passages of the lungs and pass to the pharnyx with the mucus and are swallowed. The eggs hatch while passing through the alimentary tract and the resulting embryos leave the animal in the feces where they can be readily demonstrated.

2. The embryos, when deposited in favorable conditions of temperature and moisture, molt and develop protective sheaths in eight to ten days.

3. The ensheathed embryos leave the feces or soil when the atmosphere becomes saturated with moisture and migrate onto blades of grass or other vegetation where they may be eaten by grazing animals. When eaten by suitable host animals they migrate to the lungs, where they complete their development.

4. When the larval worms reach the lungs they cause very severe hemorrhages and congestion in certain areas, resulting in pneumonia.

5. The ensheathed embryos possess remarkable resistance to cold and dryness. They may be frozen for considerable periods of time or repeatedly frozen without injury. They may also be completely dried for considerable periods of time without injury.

6. The larvæ of *Dictyocaulus filaria* reach maturity in the lungs in five to six or seven weeks after being taken into the stomach of a suitable host animal such as a sheep, or other ruminant.

7. The mode of gaining entrance to the body of the host is peculiarly adapted to grazing animals, since the larvæ migrate onto blades of grass and other vegetation where they can be readily eaten.

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RELATIONSHIP OF EQUINE AND HUMAN GLANDERS.

By C. D. MCGILVRAY, Toronto, Ont.

It has long been recognized that glanders was a specific disease affecting equines and that its occurrence had a special significance owing to its transmissibility to man.

The causal organism is the "Bacillus mallei," which was isolated and grown in pure culture by Lœffler and Schutz in 1882. Prior to this the disease was nevertheless generally acknowledged to be of a contagious character and the identification of the "Bacillus mallei," supported by exact animal experiments, was confirmative. Glanders has been found more or less prevalent among horses in all countries irrespective of climate, with the possible exception of Australia, which appears to have remained exempt.

In Canada the disease has been largely suppressed although formerly it prevailed quite extensively in certain sections, entailing considerable losses among horses and occasionally affecting man. The disease has some points of interest in its clinical aspects in man and horses.

GLANDERS IN MAN.

In alluding to the occurrence of Glanders in man I am prompted to do so in view of the fact that two cases came under personal observation while dealing with the eradication of glanders among horses in Manitoba. The details of these cases are appended herewith and are recorded in monographs on Human Glanders published during 1906 and 1907 by G. D. Robins, M. D., of the Royal Victoria Hospital at Montreal.

CASE OF DRS. GRAIN AND ROSS.

The subject was a young farmer named Fraser aged 22 years, residing near Selkirk, Manitoba. He had been away from home for a few weeks and returned on August 20th, 1905. During his absence one of the horses on the farm had acquired a profuse nasal discharge. He closely examined the horse, particularly its nostrils and its mouth as to the condition of its teeth. During the process of examination of the teeth one of his hands was slightly scratched. Two days later (August 22nd) he felt languid while at work and during the day vomited several times. The following day, August 23rd, he refused food and complained of pains in the region of the loins and hips. During the succeeding days he continued to get worse and on August 26th a physician was consulted and made a diagnosis of probable typhoid fever, there being at this time no external manifestations suggesting glanders.

On September 3rd the first clinical objective symptom appeared as a large painful nodule on the forehead. Two days

later the nodules had rapidly increased and appeared almost simultaneously on the chest, arms and legs. The joints became extremely painful owing to involvement of the articulations and synovial membranes. On September 6th the nodules had developed into pustules and later formed ulcers. The nostrils ulcerated and discharged a viscid bloody material. On this date an examination of the horses was made by me and I also had the privilege of seeing the young man. One of the horses showed well-marked clinical evidences of glanders and was confirmed by mallein test. The attending physicians also made a positive diagnosis of glanders in the man, which was confirmed by cultures and male guinea pig inoculation. Pustules and ulcers developed still more rapidly, the lips and eyelids ulcerated, accompanied by a viscid discharge causing one eye to become completely closed. The patient succumbed on September 8th, literally covered with pustules and ulcers.

Notanda: The period of incubation was two days, as the patient unquestionably became inoculated on August 20th and on August 22nd became ill. The typhoid-like illness continued for 12 days, and on September 3rd the first clinical objective symptom appeared followed by the period of nodular eruption, nasal discharge and ulceration lasting five days, death taking place on September 8th. The duration from time of infection to death was 18 days.

CASE OF DR. J. D. STEWART.

The subject was a farmer named Hall aged 35 years residing near Darlingford, Manitoba. Several of his horses had acquired profuse nasal discharge and sores on the skin of the limbs. The owner undertook treatment of the horses and during the process became infected during the first week in May 1905. On May 5th he began to feel unwell and complained of headache. He continued at work until May 8th when on account of severe painful swelling in the right leg and left arm he remained in bed. A physician was consulted and it was thought the ailment was probably inflammatory rheumatism. On May 12th I happened to see his horses and found them suffering from advanced glanders. I also examined the man, he complained of pains in the axilla, and in his joints, particularly the knees and hips. His face showed marked icterus with darkish areas under the eyelids. On the calf of the right leg and on the left upper arm

there was present a painful swollen tense shiny area of cellulitis about the size of one's hand. I reported the case to Dr. J. D. Stewart at Darlingford, Manitoba, and advised him that in my opinion it was glanders developing.

He visited the patient and found him restless and feverish, temperature being 103.2°— and pulse 100. The circulatory and respiratory systems were negative. The patient's conditon remained unchanged until May 16th, when the fever increased and an ulcer had formed on the left shoulder and a nodule on the forehead and one on the left thigh. The pulse was quite irregular; there was no cough, and no nasal discharge as yet. On May 17th the patient was in extreme agony through pain and greatly depressed.

Reddened nodules and pustules developed on the shoulders, back and thighs. At this time a consultation of three physicians took place by request of Dr. Stewart. On May 19th the patient became literally covered with sores and died the following day, May 20th, 1906.

The diagnosis of glanders in the horses was confirmed by mallein test.

The diagnosis in the case of the man was confirmed by cultures and male guinea pig inoculation.

Notanda: The period of incubation, while not definitely fixed, did not exceed five days, as patient began treatment of his horses on May 1st and became sick on May 5th. The disease extended from May 1st to 20th, the duration thus being about twenty days.

GLANDERS IN HORSES.

Natural infection occurs through the medium of the nasal discharge and secretions of the cutaneous ulcers from diseased animals. In the majority of cases infection in horses takes place through the ingestion of food or water contaminated with the "Bacillus mallei" contained in the nasal discharge from infected animals. While the disease spreads less rapidly when horses are kept under good sanitary stable conditions or where they are kept at pasture, nevertheless it must be acknowledged that even under these apparently favourable conditions it frequently prevails to a considerable extent. This is clearly demonstrated by the occurrence and spread of glanders among horses on the open ranges of the west. In general the disease is disseminated through the ordinary channels of horse traffic and frequently

through the medium of occult cases. In horses glanders varies in duration but usually inclines to a chronic course characterized by the development of nodules which tend to degenerate and to form lesions affecting the mucous membranes, the skin, lymphatic glands and internal organs, more especially the lungs and liver. In the majority of cases the lungs and air passages are affected. Sometimes the lesions are limited to the lungs in the form of grayish tubercle-like nodules and at other times by pneumonic areas with purulent or caseous foci embedded therein. These are the so-called occult cases or concealed pulmonary glanders, which largely predominate in horses. Where the air passages are affected the lesions are found chiefly affecting portions of the trachea, the larnyx and the nasal cavities, accompanied with nasal discharge.

In the early stages of development the lesions appear on the affected mucous surface as grayish nodules the size of millet seeds surrounded by a reddened area. Degeneration of the nodules results in the formation of ulcers which, as a result of coalescence and tissue destruction, are of varying size and somewhat irregular in shape with raised borders and ragged edges. Where the skin is involved the lesions appear as small nodes and bud-like ulcers, the so-called "farcy-buds." The legs are most generally the seat of the cutaneous lesions, although they also occur at times on the face and sides of the body. At the onset there is frequently an acute edema or lymphangitis extending up the forearm or the thigh. This is succeeded by the development of nodes and the formation of farcy buds along the course of the lymphatic vessels. The appearance of one bud is rapidly followed by others extending in rows along the corded lymphatic vessels.

The buds at first exude a viscid oily material which adheres like varnish to the surrounding hair. Later they become transformed into deep crateriform ulcers with thickened granulating margins and a purulent secretion which at times is reddish.

The submaxillary lymph glands invariably become enlarged on the side corresponding to the affected nasal cavity, particularly when there is nasal discharge. At first the affected gland is slightly tumefied and sensitive, but subsequently, as a result of persisting adenitis, it becomes organized into a firm, knotty tumor firmly embedded in the surrounding tissues. Where the lungs are affected the bronchial lymph glands may also show infection.

DIAGNOSIS.

In horses the cardinal signs constituting clinical cases of glanders may be enumerated as follows:

1. A chronic discharge either from one or both nostrils, which is tenacious, becoming profuse, and occasionally tinged with blood and generally without offensive odor.
2. Visible ulceration of the nasal septum.
3. Enlargement and induration of the sub-maxillary glands on the side corresponding to the affected nasal cavity.
4. The presence of farcy nodes, buds or ulcers on the skin of the legs or body.

In referring to the dignosis of glanders in horses it should be clearly understood that they may be affected for a considerable length of time, even for a year or more in some cases, without showing any recognizable clinical evidences. These are the so-called occult cases or pulmonary glanders, in which the disease remains in a concealed state affecting the lungs or the air passages. These occult cases predominate in horses and form the larger percentage of those affected. In view of this some satisfactory means must therefore be employed to detect occult cases and to confirm the diagnosis in clinical cases. For this purpose allergic reactions are adopted and the test is made with Mallein, which is prepared from the toxic substance produced in cultures of the "Bacillus mallei." When applied to suspected animals the resulting negative phase or positive reaction serves as an index as to the presence or absence of infection. The nature of the reaction to Mallein depends on the method of applying the test, there being three methods available, either of which may be employed. They are known respectively as the Ophthalmic Mallein Test, the Intra-palpebral Mallein Test, and the Subcutaneous Mallein Test. In the application of the Ophthalmic Mallein Test four or five drops of concentrated Mallein are placed within the lower eyelid with a dropper or a camel's hair brush. Nothing is put in the other eye, which thus serves as a control. The positive reaction becomes noticeable within ten hours and lasts from six to thirty hours longer, and is manifested by a muco-purulent secretion from the inner canthus of the eye and reddening of the conjunctiva with edema of the eyelids. In the negative phase the eye remains unchanged. In the application of the Intra-palpebral Mallein Test a few drops of Mallein are injected hypodermically into the skin of the lower

eyelid. The positive reaction is manifested by painful swelling of the eyelid and a muco-purulent secretion from the inner canthus. The swelling increases during the twenty-four hours following the injection and continues for forty-eight hours or longer. In the negative phase a slight edema may be present which is comparatively painless and usually disappears during the first twenty-four hours.

In the application of the Subcutaneous Mallein Test about 2½ c. c. of Mallein solution is injected subcutaneously with a hypodermic syringe, the site selected being the side of the neck. Before injection the temperature is taken twice three hours apart to obtain the normal range.

Following the injection the temperature is taken, commencing with the tenth hour and recorded at intervals thereafter two hours apart until the twentieth hour. The positive reaction is manifested by a marked increase of temperature reaching and exceeding 103° F., and the development of a hot painful swelling at the seat of injection on the neck. The typical reactionary swelling is circular in outline three inches or more in diameter and persists for twenty-four hours or longer.

In the negative phase the temperature remains within a normal range and at the site of injection there is only a slight local edema which tends to disappear in a few hours.

THE SUPPRESSION OF GLANDERS.

Glanders in man may be regarded to some extent as an occupation disease in that those affected have usually intimate relationship with horses and contract the infection by inoculation direct from a diseased horse, or else are laboratory workers who become infected with the "Bacillus mallei" while engaged in laboratory diagnostic technique. The prevalence of human glanders depends on the existence of equine glanders. Thus cases of human glanders become more prevalent where the disease prevails extensively among horses.

The eradication of equine glanders is therefore essentially important. In the suppression of equine glanders in Canada all animals which definitely react to Mallein are immediately slaughtered and their carcasses properly disposed of by burying or by cremation. The stables and utensils contaminated by the diseased animals are then thoroughly cleaned and disinfected under the direct supervision of a Veterinary Inspector of the Health of Animals Branch. The remaining horses are again tested in fif-

teen days, and if no further reactions are detected the premises are released from quarantine.

As a result of this policy the disease has been materially reduced and its complete eradication is possible and has already been accomplished in several of the Provinces of Canada.

The subjoined statistical information shows the progress made and the compensating cost of suppressing glanders during a period of 13 years, extending from 1905 to 1917:

YEAR.	Horses tested for Glanders.	Reactors affected with Glanders.	Amount of Compensation paid.
1905	1,777	871	$69,053.27
1906	1,403	336	27,207.37
1907	3,065	199	17,303.11
1908	1,319	124	9,304.91
1909	813	70	5,391.27
1910	380	19	1,536.66
1911	930	38	3,389.98
1912	993	24	2,030.00
1913	247	20	1,780.00
1914	733	45	5,313.33
1915	177	4	443.33
1916	37	Nil	Nil
1917	40	Nil	Nil

THE URGENT NEED FOR MEAT INSPECTION LAWS IN OUR CITIES AND TOWNS, AND IN RURAL IOWA.*

J. H. McLEOD, Charles City, Iowa.

[EDITOR'S NOTE: During the session of the Iowa State Legislature recently adjourned, legislation was enacted covering a number of the points suggested in Dr. McLeod's paper, particularly in connection with the control of tuberculosis and the safeguarding of the public milk supply.]

In presenting this subject under the above title, I realize that the situation in Iowa is only partially covered, as the necessity for action in recommending adequate state laws, which will not only insure a pure meat supply, but legislation governing our milk supply is, of course, equally important and necessary.

We, as veterinarians and sanitarians, are not necessarily concerned with the historic past in this connection, except to correct apparently defective and obsolete statutes, which now have only a limited place in the control of infectious or contagious disease. It was once believed (and not so long ago) that fumigation was

*Presented at the 31st Annual Meeting of the Iowa Veterinary Association, Ames, Iowa, January, 1919.

one of our main reliances in preventing the spread of contagious disease. Now a fuller understanding of the manner in which infection is spread and careful tabulations of statistics show the emphasis belongs on much more important preventive measures.

Koch's theory, that the bovine type of tubercle bacillus did not infect man, is past history, but even so that belief and opinion from Koch has proven to be of great value, as it started scientific investigation in that direction, which has since demonstrated conclusively that the bovine type of tubercle bacillus can and does infect man, and is one of the main factors in primary infection of this disease in children. So we have gathered from this opinion and belief of Koch's, some facts concerning this disease that must be made known to our people, through an intensive educational campaign.

The farmer and breeder must be still further reached and advised. The national government is reaching out a helping hand. It is willing to do its share in an educational campaign for the eradication of this disease. It invites coöperation with state and county authorities, chambers of commerce, clubs, farmers' bureaus, farmers' and breeders' agricultural associations, etc. As soon as this coöperation has been assured an intensive campaign of publicity for the eradication of bovine tuberculosis should be launched. The plan of eradication and compensation for reacting animals is that of coöperation by the owner of the cattle, the county, state and bureau of animal industry. This is a practical proposition; it is fair to everyone concerned, but without coöperation as above outlined very little can be accomplished. Let the state of Iowa, by legislative enactment and in coöperation with the federal government, make appropriation for the eradication of bovine tuberculosis, and authorize the boards of supervisors to act jointly in its eradication from circumscribed areas. When farmers and breeders fully understand the nature of this disease, its danger to public health, as well as a large yearly economic waste, and that the government stands ready to pay its just share in making up the loss sustained by the owners in the disposal of reactors (which is the crucial point), there should be no question of their favoring adequate state laws to meet the requirements of the situation.

The present situation in Iowa makes it imperative that some action be taken in framing and recommending adequate laws

governing the inspection of our food animals prior to and after slaughter. The increasing prevalence of tuberculosis in our herds of cattle and hogs impresses the need for this class of legislation, as this disease alone is responsible for more than 50 per cent of the animals rejected as unfit for food at packing plants in Iowa where federal meat inspection service is maintained.

We are all familiar with the slogan regarding Iowa, "Of all that is good, Iowa affords the best," but in her supervision over that portion of edible meat products, the cattle and hogs, that are raised on her fertile farms and later consumed by the people, she does not appear to be doing her best. She can do better by providing and maintaining a meat inspection service which will insure her people that such products are pure and wholesome and free from diseases which are communicable from animal to man.

The federal meat inspection service covers to a considerable extent the meat products sold within the state, and from such federal service we derive great benefit, still the federal meat inspection service is intended for interstate and export trade. Some time after this federal meat inspection service was inaugurated certain foreign countries which were large importers of our meat products served notice upon our government that they would not accept our meat or its products, unless it could certify to them that they were free from certain specified diseases. This demand was met by Congress in 1891, and resulted in much improved meat inspection service, which provided for the ante-mortem and post-mortem inspection of all food animals intended for export or for interstate trade, the microscopic inspection of pork, and the stamping of all such inspected products by the well-known "Inspected and Passed" stamp.

The public health and economic welfare of this nation depend largely upon this act of Congress; still it has its limitations, for this valuable service is without jurisdiction over food animals which are slaughtered and consumed within the state borders. The people of this commonwealth are certainly justified in demanding from our state government the same class of meat products as were demanded from the United States by foreign governments.

We are all more or less familiar with local conditions which create a demand for legislation governing this matter. The unsightly and unsanitary slaughter house can be abolished, if recourse be taken to the Iowa nuisance statute. Dealers, however,

have no difficulty in overcoming this action. They have been known to bring for slaughter calves and sheep to their places of business and to kill their beeves at the point of purchase. They can accommodate themselves remarkably well as circumstances and local conditions permit.

Tubercular animals are bought and sold every day, creating centers for new infection. The larger portion of milk which is consumed within the state is neither from tuberculosis-free herds nor is it pasteurized. It is placed on the market simply as milk, supposedly within the law as to butter-fat content. If the Iowa statute which governs the sterilization of creamery by-products is in force we do not know it, neither do we appear to be deriving much benefit therefrom. A statute of such significance to the hog industry rigidly enforced would surely have a tendency to decrease the spread of tuberculosis in hogs. Instead, it has been observed that hogs fed creamery by-products show a larger percentage of tuberculosis than do hogs fed outside the creamery circuit. If the percentage of tuberculosis in cattle and hogs increases as it has in the past few years we will soon have become one of the worst infected states.

The aggregate amount of food which is diverted from the proper channels of commerce through tuberculosis, hog cholera, hemorrhagic septicemia, and other diseased conditions by rejection of carcasses and from state losses is enormous and represents, perhaps, millions of dollars.

There is a phase of the situation which appears more promising. Our most successful farmers and breeders are now coming to a realization of the fact that it does not pay them to feed high-priced feed to diseased stock, and from the sentiment expressed by many of them it appears certain that they would welcome any just measure which aims to protect our public health and live-stock interests. They gradually analyze the situation in their own interests and appear now to be in a more receptive mood for legislation than ever before. On the other hand are those who have had the benefit of years of state-wide publicity and education but still turn a deaf ear to it all. They are not interested although they have followed their reactors to the packing houses, the inspector has explained the nature of the disease and shown them the lesions. It is hard to convince them when they are up against a serious financial loss.

The owner of the suspected stock may know that his stock is tubercular and he may not; at all events he keeps still about the matter until it happens when sales are made from his herd of cattle, reactors are found and complaint is entered and an official test is ordered. Such suspected herds I have known to be 100 per cent tubercular. Can any one estimate the amount of infection originating and dispersed from such infected cattle for years, perhaps, before the official test is made? The unsuspecting purchaser of such stock simply must take tuberculosis along with the animals purchased and a new center of infection is established. Imagine, if you please, the result of an auction sale of such a herd. Such sales should be prohibited, unless it can be shown that all stock sold is free from all forms of contagious or infectious disease. Through the medium of sales both public and private the spread of contagious diseases has been going on for years throughout our state and if allowed to go on, in the case of tuberculosis alone the state is simply legalizing the traffic in tubercular animals and legally exposing men, women, and children to infection. I have taken considerable space in presenting the question of tuberculosis, as we cannot expect to get far with meat inspection in our cities and towns and in our rural districts until satisfactory legislation is passed and the work of eradication commenced. The sanitary municipal slaughter house, township meat rings with well-drained sanitary slaughter houses, should be encouraged. There should be maintained adequate ante-mortem and post-mortem veterinary inspection service when possible over all animals intended for consumption as food. This service conducted under state supervision would prove of great value in locating the disease-infected centers, which would mean much to the community.

The list of diseases and diseased conditions recognized under federal inspection laws which render our food-producing animals unsafe for human consumption, should be made to apply to all animals slaughtered and consumed within the state. We should aim to procure legislation and eventually maintain a meat inspection service for Iowa as near to the standard of the federal service as we can get.

Our veterinary colleges are graduating capable men, carefully educated for this work, who will welcome the opportunity of applying their talent in this broader field, which means so much to the public health and our livestock interests.

FURTHER REPORT ON LYMPHANGITIS IN CATTLE CAUSED BY ACID-ALCOHOL FAST ORGANISM.*

By J. TRAUM,
Agricultural Experiment Station, Berkeley, Calif.

The subject that I am scheduled to present to you this afternoon has already been discussed by me before most of you in one form or another. Report on this disease has been published in the Journal of the A. V. M. A., May, 1916.

Cases have been coming to our notice at various times, and while the percentage of cattle so affected is small we do not consider the disease a very rare one. The reason that such cases have not more often been brought to the attention of the cattle practitioner is principally that a general disturbance does not accompany this disease. It is only noticed or becomes of any concern to the dairyman when the lesions break through the skin, producing a discharging wound which is usually difficult to heal by ordinary wound treatment. In one of our cases severe lameness was also present.

We feel that this is distinctly a disease which should interest the veterinarian since it resembles tuberculosis in many respects. It should be of further interest to you because the affected cases yield to simple operative treatment. The presentation and demonstration this afternoon is intended to act in part as an introduction to that portion of tomorrow's clinic devoted to this disease.

History of our important cases, together with a description of the lesions and reference to our laboratory work, appears to me to be an effective way of bringing the clinical picture of this disease before you.

On November 20th, 1915, I received for examination a nodule about the size of a hen's egg, which had been removed on November 18th from the subcutaneous tissue of a cow corresponding to a point about the center of the humerus. Upon section this material was found to contain in its center an area of coagulation necrosis about the size of a hazel nut, surrounded by a dense connective tissue which, in turn, was permeated by small-sized necrotic foci. Smears made from these necrotic areas and stained by Ziehl-Neelsen method, decolorizing with 20% sulpuric acid and also with 95% alcohol or with 3% acid-alcohol

* Presented at annual meeting of the California State Vet. Med. Ass'n, Fresno, Calif., June 1, 1919.

(hydrochloric), showed organisms which, in some instances, could not be distinguished morphologically or tinctorially from tubercle bacilli.

CASE 1.

The history of the cases concerned, as reported to us, is as follows: Early in October the above mentioned cow and another cow (Case 2) each presented an enlargement about one and one-half inch in diameter, back of the knee; in cow No. 1 the left knee being affected, in cow No. 2 the right. The dairyman had been treating these with tincture of iodine. This treatment produced no apparent improvement. The abscess on cow No. 1 was discharging a cream-colored, glutinous, odorless pus, containing yellowish, calcareous granules at the time when the nodular mass above mentioned was removed. It was found then that the disease process had extended on the external face of the limb up to the shoulder joint, following the course of the lymphatics, and manifesting itself in the form of corded nodular masses varying

from the size of a bean to that of a goose egg. In cow No. 2 the disease presented a similar picture, but was not so extensive, the nodules being smaller and fewer in number.

As indicated above, the microscopic examination suggested a diagnosis of tuberculosis, but the location of the lesions on the three animals (another cow, Case No. 3, having developed similar lesions on the right front leg), together with the fact that although semi-annual tuberculin tests were made no reactors had been found in this herd during a period of two years, did not warrant the diagnosis of tuberculosis. Another nodule was removed from cow No. 1 on November 24th, carefully handled, and taken to the laboratory and, upon microscopic examination, revealed the presence of acid-alcohol fast organisms which resisted the action of antiformin.

The nodules in all these animals were firm on palpation, but all the removed nodules were found upon section to contain ne-

crotic areas which in most instances had reached a stage of liquefaction. Some of the nodules were difficult to remove intact, since the pus had made its way to the outermost zones of the capsules.

The organisms in the solid necrotic areas were more plentiful than where liquefaction was present. In most instances they were 3 to 5 microns in length and beaded, appearing to be made up of two or more coccoid or bacillary members; some were fine, thin, straight rods, about 2.5 to 3.5 microns in length, others were slightly longer and slightly curved or bent, still others showed one end larger. Coccoid forms were also found. The organisms retained the color when stained by the Gram method. When stained by the Ziehl-Neelsen and counterstained by the Gram method, organisms with one or two acid fast portions and a Gram positive granule were observed. Few showed the Gram stain only.

In the middle of December a fourth cow showed four small subcutaneous nodules in back and a little below the left knee.

From Cases 1, 2 and 3, pus and nodules were obtained at various intervals and inoculated subcutaneous intramuscularly and intraabdominally into a large number of male and female guinea pigs; subcutaneously and intravenously into rabbits and chickens. Mice were fed this material. These experimental animals were allowed to live various lengths of time, with no apparent ill effects except, that in the guinea pigs and rabbits, at the points of inoculation, not infrequently there developed an enlargement which disappeared in from two to three weeks — these sometimes contained acid fast organisms. In a few of the many inoculated guinea pigs, several pin point or one or two small irregular necrotic areas were observed in the liver. One hog inoculated subcutaneously and another intraabdominally gave negative results.

Cases 1, 2 and 3 were kept under observation continuously until slaughtered.

At no time were all the nodules removed from Case 1 and for a period of over one year no discharging wounds developed. At the beginning of this year, however, one of the nodules had softened and was on the point of breaking through the skin. On February 28th a large mass of involved tissues was removed for study and on April 9th this cow was slaughtered. Aside from the lesions shown in the photograph, the left prescapular gland

contained, in the cortex, a calcareous area about 10 m.m. in diameter. Two guinea pigs inoculated with nodules from the limb, obtained at autopsy, and chloroformed 70 and 74 days respectively after inoculation, showed nothing of diagnostic value. One guinea pig inoculated with the calcareous lesion of the prescapular gland, and chloroformed 74 days afterwards, failed to show any evidence of disease.

On March 15th, 1917, all the diseased tissues were removed from Case 2 and no further development of the disease occurred. When this animal was slaughtered, May, 1917, the affected portion was found to have been replaced by connective tissue. Postmortem was otherwise negative.

On July 14th, 1916, we operated on Case 3, removing all affected tissues. The notes of this operation read: Removed several subcutaneous nodules. These varied in size from one-half pea to that of an unshelled almond. At the point of the shoulder, several nodules formed a large conglomerate mass. On account of the thin walls of the capsules it was difficult to dissect out the nodular masses without permitting the enclosed glutinous and cheesy material from escaping from the nodule.

In May, 1917, this animal (Case 3) was sold to the butcher. Autopsy findings were again negative, excepting for a slight thickening at the operative field.

Case 4 was operated upon February 20th, 1916, removing the four small encapsulated necrotic masses. No reappearance of disease was reported in this animal.

On February 12th pus which had been obtained by Drs. Hill and Caldwell of Oakland from the vicinity of the fetlock joint of the left hind leg of a cow (No. 5) was brought to my attention by Dr. F. W. Wood of the Cutter Laboratory. This pus appeared very similar to that obtained from cows 1, 2 and 3. Microscopic examination in this case also showed similar acid-alcohol fast organisms. Drs. Wood, Hill and myself visited the dairy owning cow No. 5 on February 19th and found a sixth case. In this last case we found a soft tumor, about one inch in diameter, back of the right knee, and nodular masses connected by cords of infected channels extending upward to a point below the shoulder on the outside of the leg, very much like those found in the other cases. In case No. 5, at one point, the pus had made its way to the surface from a small nodule, presenting an ulcer which, in appearance, was like the buds found on the limbs of farcy horses.

Drs. Caldwell and Hill operated on this case, carefully dissected out the diseased tissues. Guinea pigs and rabbits were inoculated with material from this case with negative results excepting that one guinea pig, chloroformed 25 days after inoculation, showed many abscesses in the liver, in which indistinct acid fast organisms and Gram positive beaded rods and coccoid forms were found.

The clinical picture thus far described suggested streptothricosis (Farcin du bœuf). The presence of acid fast organisms did not tend to weaken this diagnosis, but rather supported it, since bacillary acid fast forms have been described as being present in this disease. In all our work, however, we were unable to find any branching filamentous forms. The large number of tubes of varied culture media inoculated from these cases have thus far failed to yield any definite results. Animal inoculations have up to date been of no assistance in establishing a def-

inite diagnosis. They, however, eliminated mammalian tuberculosis, since a large number of guinea pigs inoculated with material, which, as evidenced by microscopic examination, contained a great many acid fast organisms, failed to develop tuberculosis even when allowed to live for many months.

At this time the allergic tests were resorted to in our attempt to establish a diagnosis, but this procedure failed to clear up the situation.

All six cows were tested intradermally both with a streptothrichin, prepared from Streptothrix nocardii grown for five weeks on 4% glycerin bouillon and prepared after the manner of Koch's O. T. and used in 20% strength, and with a 50% dilution of avian tuberculin (the latter kindly furnished by Dr. Van Es). Cows 1, 2 and 5 gave distinct reactions to the avian tuberculin, while cow 3 gave a doutbful reaction. Case 1 gave an equally strong reaction to the streptothrichin, while cases 2 and

5 failed to give a decided reaction to this test. Cases 4 and 6 failed to react to either of these tests. Cases 1, 2 and 3 were ophthalmically tested with streptothrichin and Case 1 again gave a marked reaction, while the others were negative. Cases 1, 2, 3 and 4 were tested with ordinary veterinary tuberculin, 1 and 2 being tested subcutaneously with 10% O. T., and the others intradermally with 50% O. T., and the results were negative in all cases. All four were then given the ophthalmic test for tuberculosis and again the results were negative. The failure thus far to grow the organism and the reaction to avian tuberculin also suggested an organism very much like the one responsible for Johne's disease (Enteritis paratuberculosis). The usual clinical manifestations of this disease, however, have never been found in either of these herds nor in other herds in which the disease was later studied.

An intradermal tuberculin test was applied to Cases 1, 2 and 3. Case 2 reacted with swelling the size of two almonds, while Cases 1 and 3 were negative. In July, 1917, Case 1 gave positive swellings in both subcaudal folds. First, an injection was made with tuberculin and 36 hours later the opposite fold was injected with avituberculin. Case 1 was later again tested, once with the subcutaneous and once with the intradermal method, giving negative results to both tests. The last two tests were six months apart.

On November 1, 1917, a seventh case came to our attention. This animal gave a definite reaction to the intradermal tuberculin test which persisted for at least 120 hours. A string of well-defined subcutaneous enlargements and connecting cords were found on the left fore leg, extending above the knee. One of the softened nodules was opened and scattering acid fast organisms were found in smears from this material. Guinea pigs and culture media inoculated with this material yielded results similar to those described above. No autopsy was made in this case.

Case 8. Another case came to our notice December 21st, 1917. This animal was lame on the right forelimb and showed a large discharging wound on the outside, a little above the center of the radius. On February 6th, 1918, we removed the lesions responsible for the discharging wound and the affected tissue above this area. We did not, however, remove all the nodules below this mass nor did we remove the scattering nodules on the left

foreleg. The wound healed rapidly. A photograph taken May 29th, 1919, showed that there was no recurrence of the disease in the operated area. No other discharging wounds have thus far developed.

Notes on this case read: A large number of nodules which were on the right front leg, extending from the fetlock to a point on the shoulder were removed. The nodules were small, varying in size from one-sixteenth to one-half inch in diameter and were, in most cases, surrounded by distinct capsules. They appeared in the course of long tortuous cords which frequently branched to the side. On section, the nodules showed yellowish glutinous pus containing some calcareous material — the smear stained for acid fasts revealing but few such organisms; when, however, treated with 2% NaOH solution, no difficulty was experienced in finding acid-alcohol fast organisms.

In August, 1917, this cow reacted to the intradermal test and was negative to the subcutaneous test January, 1918. This animal has been associated for some time with tuberculous cattle.

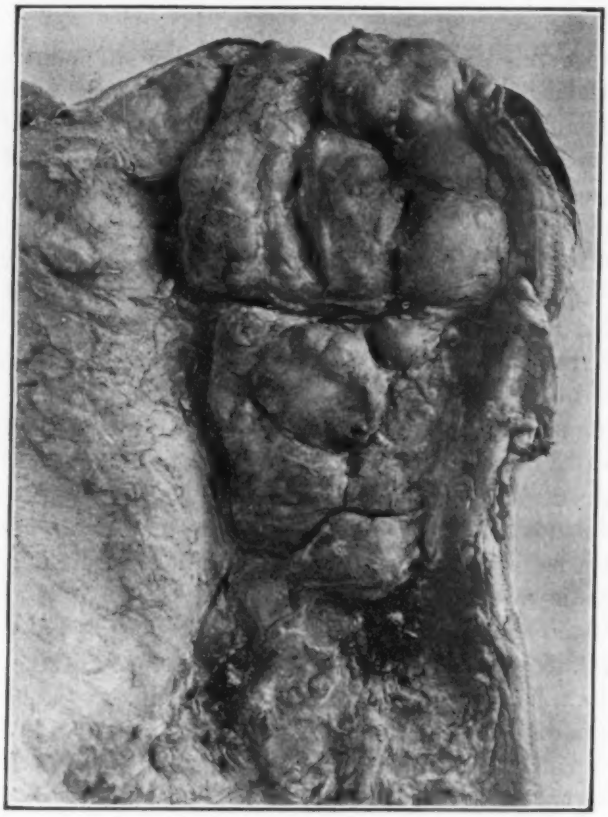
The inoculation of guinea pigs, rabbits and media of various kinds with material from this case also failed to reveal anything of diagnostic value.

Case 9. On February 18th, 1918, our attention was called to a discharging wound on the left foreleg in back of the cannon bone, about halfway between the fetlock and the knee joints. About this discharging wound there was a mass of nodules connected by corded channels containing glutinous pus and extending from this mass to nodules above the knee and below into the tendon sheaths. On February 25th, 1918, this case was operated upon. We made an incision extending almost the entire length of the cannon bone and removed all the involved area excepting where the line of infection carrying pus extended into the tendon sheath.

Guinea pigs, rabbits, and a nine-months-old heifer calf were inoculated with material obtained by operation. Results were negative.

This animal was tested intradermally February 20th, 1918, and showed a reaction at 60 hours; at the 84th hour only an appreciable thickening was present. To all external appearances this animal was cured; but she could not be gotten with calf and so was slaughtered June 3rd, 1918. The only evidence of disease detected was present in the operated limb where a few half-pea-

sized necrotic foci were found attached to the inner surface of the skin just above the fetlock. (Specimen exhibited).



LESIONS FROM CASE SHOWN AT CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION MEETING—FRESNO, CALIF., JUNE 1 AND 2.

Several lower nodules removed for inoculation purposes.

Two more cases came to our notice (Cases 10 and 11) in March, 1918. These showed at the 96th hour reactions to the intradermal tuberculin test. They were slaughtered March 6, 1918, and the only lesions found are shown in the photographs.

Guinea pigs and rabbits inoculated with material from this case failed to reveal anything of diagnostic value. These two, with one other cow, were the only reactors in a herd of 68 cows. Upon examination before slaughter, all three animals appeared to be affected with this disease, one only very slightly. All three were slaughtered and no visceral or lymph node lesions were found in any of these animals. I was assisted in these autopsies by Dr. Hart and the inspector.

A twelfth case that I desire to bring to your attention showed subcutaneous nodules and connecting corded lines of infection along the thoracic and abdominal wall. This animal was killed April, 1919, and the above-mentioned were the only lesions found. This animal was tested intradermally five days before slaughter; a strong reaction resulted which was still present at the time of slaughter. Two guinea pigs inoculated with material from the subcutaneous nodules, obtained at autopsy, and chloroformed 74 days after inoculation showed no lesions.

A Holstein cow affected with this disease was brought to Fresno, Calif., for demonstration purposes. This cow was given intradermal tuberculin test May 26th, 1919; 72 hours later there was a large pea-size swelling; a week after injection she showed a pea-sized swelling. Dr. Hayes operated upon this case June 2nd, removing two almond-sized nodules on the outside of the left foreleg above the knee. A larger mass of conglomerate nodules was present below the knee which extended to the fetlock. These were purposely saved for further study. The removed nodules and many others were soft on palpation. In fact, one nodule below the knee had broken through the skin. This cow was expressed to Berkeley and on her way to pasture accidentally broke her back. Post-mortem showed an abscess in the lung caused by penetrating wire. No other lesions were found except those shown in the photograph.

The presence of lesions of this disease has not been definitely established in any visceral organ. In fact, in only one was it suspected; a cow which showed strong positive complement fixation and reacted to intradermal tuberculin test, was autopsied and several of the mesenteric lymph nodes showed what then appeared to be tuberculous infection. Guinea pigs inoculated with this material, however, failed to develop tuberculosis. No other lesions were found in this cow. Acid fasts were not searched for in this case.

Many other cases came to our notice but the above will suffice to bring the matter to your attention.

The complement fixation test, using the tubercle bacilli as antigen, yielded a high percentage of positives in the limited number tested. This is not strange, since group reactions with acid fast organisms have been obtained by other workers. These samples were included in the course of fixation tests made in coöperation with Dr. Jean V. Cooke upon several hundred sera from tuberculous and non-tuberculous cattle.

In the previous pages I have stated that our media inoculation yielded nothing definite. Recently, however, more encouraging results developed. Material obtained from Case 1, February 28th, 1919, at the time of operation, yielded, on cooked blood agar, an acid fast, exceedingly pleomorphic organism. The growth extended from the piece of inoculated tissue. The organism now grows readily at 37° C., and fairly well at 26° C., on plain and glycerine bouillon and agar, raw and cooked blood agar, Lœffler's blood serum, not so well on potato nor on alkaline glucose broth. It produces neither gas nor acid in glucose, lactose, maltose, mannite, or saccharose media. On glycerine bouillon it develops a membrane on the surface which wrinkles only in old cultures; the medium remains clear except for occasional flakes. Growth on the surface extends on the sides of the tube; several weeks' old cultures show heavy sediment. When concentrating culture grown on this medium, the characteristic tuberculin odor is noticed; it is, however, not so marked as in hot, concentrated tuberculin.

Orange-colored pigment has been observed in several tubes of glycerine agar and glycerine bouillon, seven to eight weeks after inoculation.

The form and staining reactions of this organism vary considerably even in smears made from the same colony. Sometimes it is distinctly diphtheroid. At other times it shows coccoid appearance. This was more often noticed when grown on agar. Fine rods, 3 to 5 microns or longer, bent or curved, often made up of shorter elements, are most frequently observed. Rods not of the same thickness throughout, rods with one or both ends slightly thicker, or thicker in the center, and rods with pointed ends may be seen.

They are Gram positive; acid fast when decolorized by Gabbett's method, showing, however, few greyish or blue organisms. When decolorized by acid-alcohol, a larger number give up the fuchsin stain. They do not, as a rule, stain uniformly.

The pathogenicity studies of this organism have thus far yielded the following results: Two guinea pigs inoculated subcutaneously, and two inoculated intraabdominally with glycerine bouillon cultures, each showed at the end of a week subcutaneous swellings about 1½ inches long by ¾ inch thick. One of the intraabdominally inoculated pigs was chloroformed 26 days after inoculation. The local swelling had decreased in volume to about

one-fourth of what it was at a week after inoculation. Upon section, this swelling showed an abscess, containing glutinous pus, which involved the abdominal muscle but did not extend into the peritoneal cavity. No other lesions in this animal except few pin-point greyish areas in the liver were found. Culture from the abscess showed distinct growth in three days which was similar to the inoculated culture. Smears made from this pus stained with steaming carbol-fuchsin and decolorized by Gabbett's method showed exceeedingly large number of acid fast organisms difficult to distinguish from the tubercle bacilli. When decolorized by acid alcohol and counterstained by methylene blue the same picture was seen except that here and there a blue organism was observed.

The other three guinea pigs are still alive at this writing. The local lesions have practically disappeared.

Two rabbits inoculated with the same culture showed at the end of a week bean-sized subcutaneous swellings. A month after inoculation these swellings had increased to the size of a hen's egg and at the back of the leg a thickening about three-quarters by one-half inch had developed. Pus withdrawn with a syringe yielded results the same as pus from the guinea pig described above.

Two six-month-old calves were inoculated subcutaneously above and back of the knee; a third was inoculated intravenously. Sixteen days after the inoculation, one of the inoculated calves showed a soft, round swelling at the point of inoculation about two inches in diameter. This swelling did not materially change in size at the end of a month. Smears made from pus withdrawn from this lesion showed organisms similar in morphology and staining reactions to those obtained from the guinea pig — cultures showed growth at four days.

White rats inoculated subcutaneously with the same culture showed no local lesions.

The piece of tissue from which the above-described organism developed was removed from the test tube. Portion of it was inoculated into one guinea pig subcutaneously and the other portion into a second guinea pig intraabdominally. The former was chloroformed two months after inoculation — autopsy revealed no lesions. The latter, chloroformed 57 days after inoculation, showed a few small necrotic areas on liver. Smears revealed no acid fast nor other organisms. These two guinea pigs

developed local swelling, about 1 inch long and ½ inch thick, which, however, had disappeared when chloroformed.

Only in one other instance (Case 4) was a similar organism isolated. After three generations on glycerine bouillon, we lost it. Up to that time, we had no opportunity to do very much with it.

CONCLUSIONS.

The findings and observations recorded in this paper indicate that we are dealing with a disease which resembles tuberculosis in the character of the lesions and by the presence of acid-fast organisms in the lesions. It further resembles tuberculosis by the fact that a large percentage of cases under discussion give positive reactions to the intradermal tuberculin test; a number of such reactors have been autopsied (including some not recorded above) and in none of the cases did we find tuberculosis; in fact, in some of the reactors tuberculosis could be definitely eliminated.

That it is not tuberculosis is satisfactorily demonstrated by the failure to produce a single case of tuberculosis in the large number of guinea pigs inoculated with materials from the above-described and other cases. The organism isolated from lesions and described here as the probable causative agent resembles tubercle bacilli to some extent, differing, however, sufficiently in the character and speed of growth and microscopic appearance of smears from the cultures to easily differentiate it from tubercle bacilli.

STUDIES ON ANTHELMINTICS.

III. CHLOROFORM AS AN ANTHELMINTIC.

MAURICE C. HALL, Ph. D., D. V. M.,
*Parasitologist, Research Laboratory, Parke, Davis & Co., Detroit, Mich.

That chloroform is valuable as an anthelmintic for removing hookworms—what we may call an uncinaricide—has been claimed by Allesandrini on the basis of clinical experience with human patients, and has been experimentally shown in tests against hookworms of the dog by Schultz and by Hall and Foster. Chloroform is a constituent, and the active uninarici-

* Resigned March 27, 1919.

dal ingredient, of Hermann's mixture, which contains chloroform and castor oil combined with oleoresin of male fern or oil of eucalyptus, and is also present in a number of proprietary and trade preparations.

In experiments on dogs, Hall and Foster found that 0.1 m. p. k. (mil per kilo) was too small a dose for this drug, and experiments in this laboratory indicate that at least 0.2 or 0.3 m. p. k. should be used. This naturally raises the question as to whether chloroform is a safe drug to use and what constitutes a safe therapeutic dose and a lethal dose.

It has long been known that the administration of chloroform to produce anesthesia was sometimes followed by a delayed poisoning in which pathological alterations of the liver were a prominent condition, sometimes accompanied by degenerations of the kidneys and heart. Bevan and Favill referred the toxic effects of delayed chloroform poisoning to toxins, which could not be eliminated, from the liver cells. They noted the presence in the blood and urine of acetone, diacetic acid and betaoxybutyric acid. Opie and Alford found that fats increased in susceptibility to chloroform poisoning, while carbohydrates afforded a measure of protection against it, which accords with the clinical experience of English surgeons. Offergeld thought that death in delayed chloroform poisoning is due to nephrolysis, as a result of the action of the chloroform on the kidney cells. Wells thought that the liver changes are due to the effect on the liver of poisons that destroy the synthetic functions of the liver cells without destroying their autolytic ferments, with a resultant autolysis of the liver cells, indicated by the presence of free amino acids, purins, proteoses, peptones and polypeptids in the liver. Whipple and Hurwitz have found that fibrinogen may be almost eliminated from the circulating blood in chloroform poisoning, subsequently reappearing after the repair of the liver, which takes place usually within 10 days. Whipple and Sperry find that chloroform anesthesia for one or two hours invariably causes some central liver necrosis and note that chloroform anesthesia for 35 minutes in man may cause almost complete liver necrosis with a fatal termination; the essential change is extensive necrosis and fatty degeneration of the liver; there may be numerous ecchymoses and hemorrhages into the peritoneum and upper intestinal tract; the pancreas may show fat necroses and ecchymoses; in pregnancy there

may be placental necrosis with separation and hemorrhages; the liver necrosis is microscopically visible only after 6 to 10 hours; they find that dogs die in 1 to 4 days, with symptoms of intoxication and vomiting, sometimes vomiting blood. Schoenhof has summarized 29 cases of delayed chloroform poisoning in man, of which 17 recovered and 12 were fatal. He cites some experiments on dogs as follows:

Dog 1, weighing 5.5 kilos, was given 7 mils of chloroform (a little over 1.27 m. p. k.); after 5 minutes dog was restless, salivated and staggering; recovered in a half hour. Next day, this dog was given 20 mils of chloroform (a little over 3.63 m. p. k.); symptoms more pronounced, dog vomiting and falling; dullness, sleepiness and vomiting of blood lasted 2 days; dog recovered. This animal's total dose was practically 5 mils per kilo.

Dog 3, weighing 4.5 kilos was given 50 mils of a mixture of absolute alcohol (28 parts), chloroform (40 parts), and camphor (20 parts); died in 15 minutes. The chloroform dosage here is 5 mils per kilo, without considering the other drugs used, and the other drugs must have contributed largely to the toxic effects.

Dog 4, a medium-sized dog (he regards a dog weighing 5.5 kilos as a medium-sized dog in a previous experiment; Hall and Wigdor found a 10-kilo dog to be the average size) was given 35 mils of chloroform (about 6 m. p. k., apparently); dog vomited and was dull; the next day the dog was given a mixture of 5 mils of alcohol and 20 mils of chloroform (apparently about 3.6 m. p. k.) and died almost immediately. Apparently this dog had almost 10 mils per kilo, in addition to the alcohol.

Graham believes that the necrosis following chloroform is due to its breakdown in the body with the formation of hydrochloric acid, a belief supported by the increase of salts in the urine and by the inability of ether and chloral hydrate to parallel the changes caused by chloroform, dichlormethane and tetrachlormethane; alkalis inhibit the production of these lesions. Farquhar has used sodium bicarbonate by mouth, by rectum, subcutaneously and intravenously, in a very serious case of delayed chloroform poisoning in man, with recovery, which bears out Graham's findings. Jensen finds adrenalin valuable in cases of chloroform poisoning. Whipple and Speed find that in normal animals the liver eliminates from 45 to 65

per cent of the phenoltetrachlorphthalein injected intravenously, but where the liver is damaged, as by chloroform, phthalein appears in the urine; in one of their experiments, a 21-pound dog (a little less than 10 kilos) was given 15 mils of chloroform, followed 4½ hours later by 10 mils additional, a total of over 2.5 mils per kilo; the dog was still alive 4 days afterward (no further data given). Simonds finds that feeding sugar in cases of phosphorus or chloroform poisoning furnishes cerbohydrate essential to protein metabolism, and supplies easily oxidized material to the liver, in which the glycogen is depleted, inhibiting antolysis.

It appears from the experiments noted in the foregoing, that dogs may survive the oral administration of 5 mils of chloroform per kilo of body weight, when given in 2 doses on successive days. Evidently doses of 0.3 mils per kilo should be readily tolerated as a therapeutic dose of chloroform by dogs in reasonably good condition.

The following experiments were performed in this laboratory:

Dog No. 19, weighing 22 kilos, was given chloroform at the rate of 0.1 m.p.k. in 30 mils of castor oil. The dog passed no worms; was killed the fourth day; had 1 ascarid, 3 hookworms, and 12 tapeworms. Efficacy against ascarids, hookworms and tapeworms, 0 per cent. Digestive tract in bad condition.

Dog No. 12, weighing 6 kilos, was given chloroform at the rate of 0.2 m.p.k. in 30 mils of castor oil. The dog passed 7 hookworms; was killed the fourth day after treatment; had 1 hookworm and 6 tapeworms postmortem. Efficacy against hookworms, 87.5 per cent; against tapeworms, 0 per cent. Digestive tract in good condition.

Dog No. 89, weighing 9 kilos, was given chloroform at the rate of 0.2 m.p.k. in 30 mils of castor oil. The dog passed 6 hookworms; was killed the twentieth day; had 75 hookworms and 3 ascarids. Efficacy against hookworms, 7 per cent; against ascarids, 0 per cent. Digestive tract in good condition.

Dog No. 115, weighing 10.5 kilos, was given chloroform at the rate of 0.3 m. p. k. in 30 mils of castor oil. The dog passed 2 hookworms; was killed the fifth day; had 2 hookworms postmortem. Efficacy against hookworms, 50 per cent. Digestive tract in fair condition.

Dog No. 118, weighing 12.5 kilos, was given chloroform at the rate of 0.3 m.p.k. in 30 mils of castor oil. The dog passed 1 hookworm; was killed the seventh day; had 2 hookworms, 3 whipworms and 43 tapeworms postmortem. Efficacy against hookworms, 33 per cent; against whipworms and tapeworms, 0 per cent. Digestive tract in fair condition.

Dog No. 58, weighing 3 kilos, was given chloroform at the rate of 0.4 m.p.k. in 30 mils of castor oil. The dog passed no worms; died the second day after treatment; had no worms postmortem. Digestive tract in bad condition. This dog was a weak pup, which accounts for its failure to tolerate this dose.

Dog No. 83, weighing 9.5 kilos, was given chloroform at the rate of 0.4 m.p.k. in 30 mils of castor oil, and 5 hours later was given 30 mils of simple syrup in accordance with the idea that carbohydrates afford protection against chloroform poisoning. The dog passed no worms; was killed the thirteenth day; had 12 tapeworms postmortem. Efficacy against tapeworms, 0 per cent. Digestive tract in fair condition.

Dog No. 61, weighing 6 kilos, was given chloroform at the rate of 0.666 m.p.k. in 30 mils of castor oil. The dog passed no worms; was killed the fourth day; had no worms postmortem. Digestive tract in bad condition.

Dog No. 87, weighing 7 kilos, was given chloroform at the rate of 1.0 m.p.k. in 35 mils of castor oil. The dog passed no worms; was killed the twenty-seventh day; had no worms postmortem. Digestive tract in good condition.

Dog No. 88, weighing 15 kilos, was given chloroform at the rate of 2.0 m.p.k. in 40 mils of castor oil by stomach tube. The dog passed 1 hookworm; was killed the fifty-fifth day; had 1 tapeworm postmortem. Efficacy against hookworms, 100 per cent; against tapeworms, 0 per cent. Digestive tract in good condition. This dog was put in a chloroform box with four others; the others died in an hour, whereas this dog survived almost 7 hours and required an additional amount of chloroform in the box to kill it. This experiment was published in a previous paper by Hall.

Hall and Foster at Washington found that chloroform in doses of 0.2 m.p.k. removed 474 out of 830 hookworms from 5 dogs, an efficacy of 57 per cent. All the work done indicates that the efficacy of chloroform against ascarids, whipworms and tapeworms is too little, actually and in comparison with other

drugs, to warrant its employment against these worms. In single dose to remove hookworms it has given better results than single doses of oil of chenopodium or thymol in dogs, but the results in all cases are somewhat uncertain. In human medicine, chenopodium has been given, as a rule, in 3 doses at hour intervals, and it seems likely that some such method of treatment, repeated doses of chloroform or chenopodium, will be necessary to remove hookworms from the dog. It has the advantage that the treatment may be stopped after the first or second dose if the animal shows signs of intolerance. Another possibility is to give small doses daily, or at intervals of 2 or more days, for a number of days. The writer has experimentally tested this once with chloroform as follows:

Dog No. 280 weighing 11 kilos, was given 15 minims of chloroform in a soft gelatine capsule, followed immediately by 15 mils of castor oil. Three days later the treatment was repeated. Two days thereafter it was repeated. Two days after this, it was repeated again. Four days later the dog was killed. It had 6 hookworms, 4 whipworms and 17 *Dipylidium* postmortem. Efficacy against hookworms, whipworms and tapeworms, 0 per cent. This dog received a total of a dram, approximately 4 mils, of chloroform in 7 days. It is possible that the use of the soft gelatine capsule as a container for chloroform is partly responsible for the failure of the treatment, as these capsules did not give in this or other tests the same efficacy that had been obtained by the use of chloroform dissolved in castor oil. It is probable that the dose used was too small, being less than 0.1 m.p.k.

Tests of chloroform administered in the soft capsule were made as follows:

Dog No. 256, weighing 22.5 kilos, was given 7 soft capsules, each containing 15 minims of chloroform — a dose rate of 0.3 m.p.k.—followed immediately by 30 mils of castor oil. The dog passed 1 ascarid and was killed the sixth day after treatment. There were no worms postmortem. Treatment 100 per cent effective against ascarids. Digestive tract normal.

Dog No. 265, weighing 12.5 kilos, was given 4 of these 15-minim capsules—a dose rate of 0.3 m.p.k.—followed immediately by 30 mils of castor oil. The dog passed no worms and was killed the sixth day after treatment. Four hookworms were found postmortem. Treatment 0 per cent effective against

hookworms. Digestive tract showed pinpoint petechiæ in the greater curvature of the stomach and in the lower ileum.

The reason for the failure of the chloroform to remove any hookworms from dog No. 265 is not evident. It might be thought that the capsules were hardened by the action of the chloroform and failed to open until they had passed the upper intestine where the worms were, but the presence of petechiæ in the stomach points to a different conclusion. Moreover, in the case of dog No. 256, the fact that the capsules opened in the stomach was evident from a marked chloroform narcosis exhibited by the dog within 45 minutes after the administration of the capsules.

In the 13 experiments discussed here, the digestive tract was normal and in good condition in 6 animals; in fair condition, that is, with only limited areas of moderate inflammation or petechiæ, in 4 animals; and in bad condition, with considerable inflammation or hemorrhage, in 3 animals. The dogs with digestive tracts in good condition were animals that had received comparatively small single doses (0.1 to 0.3 m.p.k.) and been killed 4 to 6 days after treatment (Nos. 12 and 256) or 4 days after the last dose in repeated treatments (No. 280), or were animals that were killed 21 to 55 days after single treatment with doses of 0.2, 1.0 and 2.0 m.p.k. (Nos. 89, 87 and 88). Those with the digestive tract in fair condition were animals that had been killed 5 to 17 days after treatment with 0.3 to 0.4 m.p.k. (Nos. 115, 118, 265 and 83). Those with the digestive tract in bad condition had been killed or had died (No. 58) in 2 to 4 days after treatment with 0.1, 0.4 and 0.666 m.p.k. (Nos. 58, 61 and 19); the one that died was weakly and sick before treatment. Hepatic necrosis was present in dogs Nos. 118, 58, 83 and 61, with doses ranging from 0.3 to 0.666 m.p.k., and killed or dying 2, 4, 13 and 17 days after treatment.

A consideration of available facts to date with reference to chloroform as an anthelmintic, indicates the following: That in administrating chloroform to dogs for removing hookworms, doses of 0.1 m.p.k. are too small and that doses of 0.2 to 0.3 m.p.k. should be used; that in the higher dosage, chloroform will have an efficacy of perhaps 50 per cent, which is better than single doses of thymol or santonin will have; that normal dogs will survive doses of 3.65 m.p.k. in one dose and 5.0 m.p.k. in 2 doses on 2 successive days; (Schultz states that 2 doses of

0.3 m.p.k. in 10 mils of castor oil each, given the same day, will kill; possibly the dogs in his experiment were not in good physical condition or other factors were involved; that normal dogs will show hemorrhagic gastro-enteritis for at least 4 days after doses of 0.4 to 0.6 m.p.k.; that the digestive tract will be in fair condition in 5 to 7 days after doses of 0.3 to 0.4 m.p.k.; that there will be entire recovery of the digestive tract in 1 to 2 months after doses of 1.0 to 2.0 m.p.k.; and that hepatic necrosis may persist microscopically for over 2 weeks in animals given 0.3 m.p.k. Chloroform appears to be safe and more effective against hookworms in single dose than any other anthelmintic, but in doses of 0.2 m.p.k. it is only about 50 per cent effective and repeated treatment is necessary for removal of all hookworms present.

DEAN MOORE'S PORTRAIT PRESENTED TO CORNELL UNIVERSITY AT SEMI-CENTENNIAL CELEBRATION.

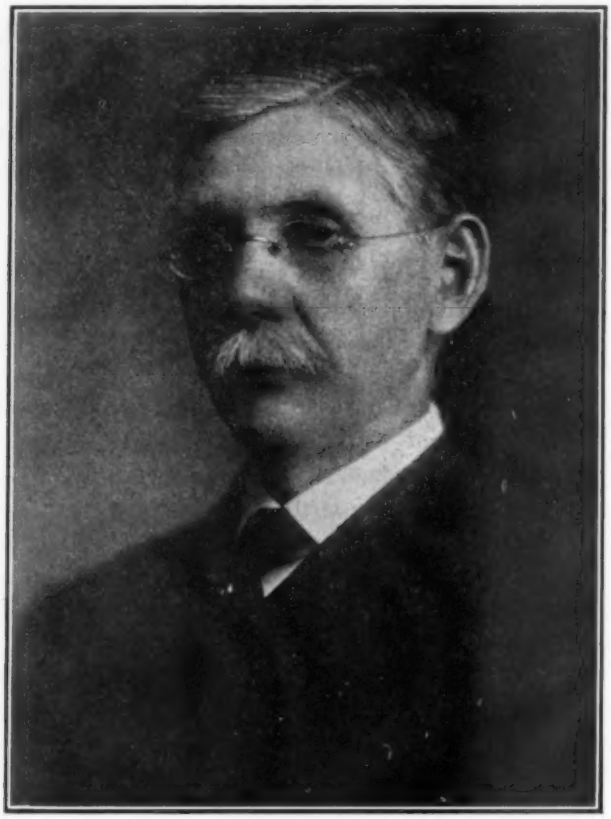
One of the unique and important features of the semi-centennial celebration, held at Cornell University at its recent commencement, was a conference at each of the colleges, where suggestions, in the form of committee reports from alumni, were presented on topics concerned with the improvement of the curriculum, in increasing the efficiency of the instruction and the strengthening generally of the relation of the University with the public.

Among these was, the State Veterinary College, where the following reports, showing the wide range of the subjects, were submitted and discussed.

1. The Teaching of Animal Husbandry. C. W. Bay, Chairman.
2. Veterinary Training Preparatory for the Army. P. A. Fish, Chairman.
3. Instruction in the Fundamental Sciences. L. L. Buchanan, Chairman.
4. Teaching of the Applied Subjects. J. G. Wills, Chairman.
5. Coöperation of the College with the Live Stock Interests of the State. Cassius Way, Chairman.
6. Methods of Teaching Veterinary Subjects. C. P. Fitch, Chairman.

7. Additional Subjects or Departments. J. F. Shigley, Chairman.

Before the presentation of the program, the Governor of the State, Alfred E. Smith, appeared and in fitting but brief remarks expressed his interest in the work that is being done and his desire to coöperate and to promote the live stock as well as the agricultural interests of the State.



DR. V. A. MOORE

In the midst of the general program President Schurman entered, and Dr. Birch, remarking that the meeting was unique in more ways than one, asked that Dr. Cassius Way be permitted to take the floor temporarily. In the presentation of Dean Moore's portrait to the University the following remarks were offered:

DR. WAY: It is a great pleasure for us, as alumni, to be present today at this celebration on the fiftieth anniversary of the

founding of Cornell University, which, by the way, is the fiftieth anniversary of the beginning of better veterinary education in America, for it was through the broad vision of Ezra Cornell that the foundation for the work of this college was laid.

It is a singular honor for us to present to the University, through our president, a portrait of our esteemed director, who occupies a unique place in the realm of science. Those who know him in this field admire and respect his ability, while those of us who are fortunate enough to know him as a teacher have learned to love him.

In the field of veterinary medicine he occupies a pinnacle; at this time he has the honor of being the president of our American Veterinary Medical Association, the greatest organization of veterinarians in the world. He was recently honored with an honorary degree from one of our great sister institutions, Syracuse University.

The University, and especially this college, has been fortunate all these years in having the guidance and association of Professor Moore, and we trust that we may have his guidance and his counsels for many, many years. We have come to know him as the thorough scientist, the great teacher, and the true friend.

Mr. President, on behalf of the alumni of this college I have the great honor to present to Cornell University a portrait of our beloved director, Veranus Alva Moore.

PRESIDENT SCHURMAN: It is a great pleasure, on behalf of the University, to accept this portrait of Dr. Moore, director of this college, which the alumni have presented. I deem it a great privilege and find it a great satisfaction to be present on this occasion. I did not wish to miss this, because I have come to entertain a great friendship and a very great affection for Dr. Moore. We have worked together in great harmony. I should be very sorry if such a piece of great good fortune should come to him and I not be here to share it. These are not things we usually say to one another. Men do not wear their hearts on their sleeves. It is not easy for me to speak of the great esteem in which I hold Dr. Moore, for it is not only regard and esteem, but the deepest friendship, I feel for him.

I have the honor to represent the University in which he represents one of the colleges. I regard Dr. Moore as one of the great educators in the University. I do not believe that there is a man anywhere in this University who has wiser and sounder

ideas on education. While he belongs to you alumni, he also belongs to the University as a whole, as a co-worker and a co-educator. I place very great value upon the sentiments of Dr. Moore on every question of University policy. That represents his standing in this University. You know what he has been to you. As the chairman of the committee said in presenting this portrait, he is a leader.

When we lost, through retirement, one of the most eminent men in veterinary science (whom I see here, and whom we all hope will be spared for very many years to us), I remember I felt how hard it would be to find a man who would fill that very large place. Dr. Moore has filled that place. No one realizes that more than his great predecessor. It has been the good fortune of the University that it has had such great directors for this college.

There are certain qualities which must be possessed by a man at the head of a college. The director must be a gentleman. That goes without saying. He must have tact, he must have sympathy. You know, through these years how Dr. Moore has succeeded so conspicuously in fulfilling these requirements.

I do not know whether you know how large a work he has done in presenting the work of this college to the leaders at Albany and elsewhere. There is no man I know in the State, dealing with the Legislature, who enjoy their confidence more fully and who has more influence with them. That is because there is a perfectly frank and honest procedure. He puts all the cards on the table and never asks for more than he feels the college needs and can use wisely. The chairman of one of the most important committees in the Legislature said to me in reference to the veterinary college: "It is the most economical institution in the State of New York."

I am glad to be with you, my young friends of the Veterinary College, on this splendid day. You are not waiting until Dr. Moore is old, but while he is in the full flush of his powers you have chosen to honor him. On behalf of the University I wish to express to you my appreciation of the fine sentiment that has animated you in this worthy enterprise.

DR. MOORE: There are times when it is difficult, if not impossible, to find words to express adequately one's feelings. I find myself in such a situation now. Had I known, I fear I would not have advocated the conference so persistently. If this

has been planned to surprise me, and incidentally to embarrass me temporarily, it has been a great success. If it is a reminder that the "chloroform" stage is approaching, I will tell you that ti is already here. If, however, it has been to assure us of your loyalty to the teachings of this college and the things for which it stands, it is most gratifying, and confirms the opinion I have held for many years.

I have felt for a long time that the alumni were true to the principles upon which this college was established. I believe that ultimately they will triumph. I believe that the time will come when there will be a veterinary profession in this country that will stand second to none in its loyalty to truth and devotion to service. But meantime it seems that the sum of our duty is to fight for the cause we have honestly in hand and with the weapons that we ourselves have forged. That is being done in New York State. Dr. Law, the father of scientific veterinary education in America, and who is with us today, can testify to fifty years of endeavor with the men who received their inspiration from him, and also of the advances that have been made.

The progress that the college has made has been due to the hard work and coöperation of the faculty and the standards your professional services have created. With the many forces that are tending to make a better veterinary profession, one man can do but little. The credit belongs to all.

I would not be human if I did not feel deeply this expression of friendship. I assure you I appreciate it and thank you one and all.

P. A. FISH.

Dr. Wm. H. Lowe of Paterson, N. J., was elected Alumni Representative to the Council of the General Alumni Association of New York University.

Chancellor Brown of New York University, in his address at the Commencement Exercises on June 18th, paid a high tribute to the response of the Alumni and undergraduates, in the stressing needs of New York University during the war period. He stated that more monies and endowment funds had been given and pledged during the past year than in the preceding six years. The demands for enlarged service is a rich testimonial of appreciation of her valued educational opportunities.

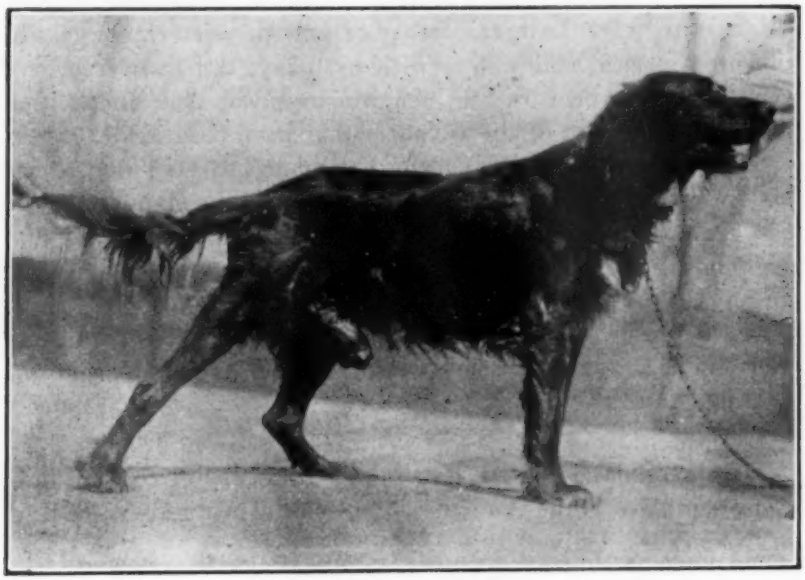
CLINICAL AND CASE REPORTS.

METASTATIC MELANO-SARCOMA.

From Veterinary Division, Kans. State Agr. College.

A male dog 8 years old, presented as a patient at the Veterinary clinic of the Kansas State Agricultural College on the 3rd day of April, 1919, with the following history:

About one month previous a small nodule on the animal's sheath first attracted the owner's attention. In a short time other nodules appeared until the entire sheath was involved and extensively swollen.



MELANO-SARCOMA.

Symptoms: Temperature 103.2, pulse 120, respirations 50.

The sheath was extensively swollen and covered with nodular enlargements. Urination was but slightly interfered with. The inguinal lymph glands were also enlarged. A tentative diagnosis of melanosis and possibly carcinomatosis was made and an unfavorable prognosis given. No treatment was applied.

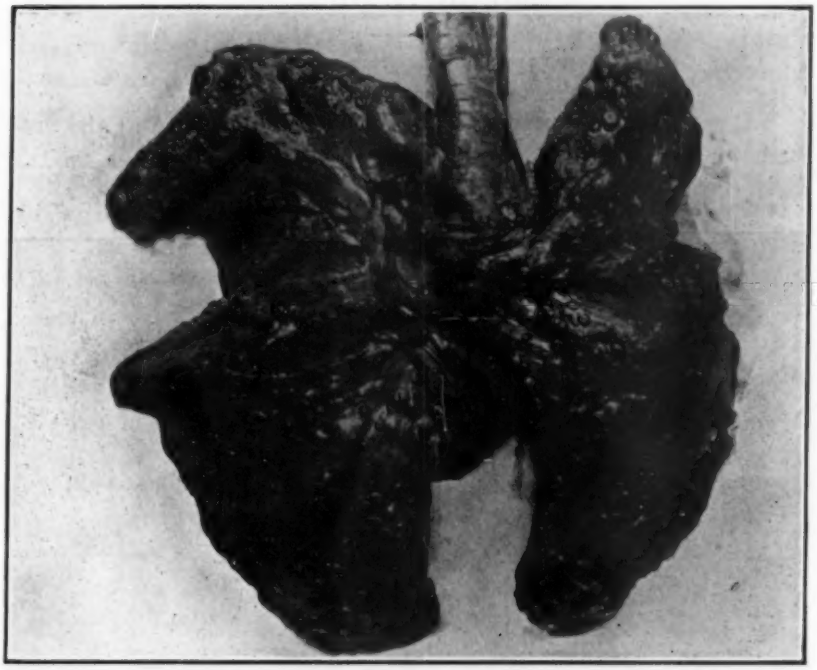
The animal was killed on April 12th, 1919, and Dr. L. R. Vawter, Instructor in Pathology, Division of Veterinary Medi-

cine, Kansas State Agricultural College, submits the following post-mortem report:

DIAGNOSIS METASTATIC MELANO-SARCOMA.

Skin in region of sheath exhibited small nodules on the surface ranging in size from a pea to a hazel nut.

The sheath greatly indurated and paraphymotic. The penis exhibited material swelling and the skin slightly roughened by small granulations. The prostate gland was about five times the average size and upon section was uniformly black in color.



LUNGS OF DOG AFFECTED WITH MELANO-SARCOMA.

The kidneys each contained two melanotic nodules on each surface and the cut surface also exhibited two or three in each kidney. These nodules averaged one-fourth inch in diameter.

The spleen exhibited five nodules along the edges of about one-sixteenth inch in diameter. The lungs exhibited very numerous melanotic nodules throughout and many very prominent nodules about the size of a pea both on dorsal and ventral surfaces.

Many minute almost imperceptible melanotic deposits were scattered throughout the lung as well as on the surface. The bronchial and mediastinal lymph glands, both right and left, exhibited marked melanosis.

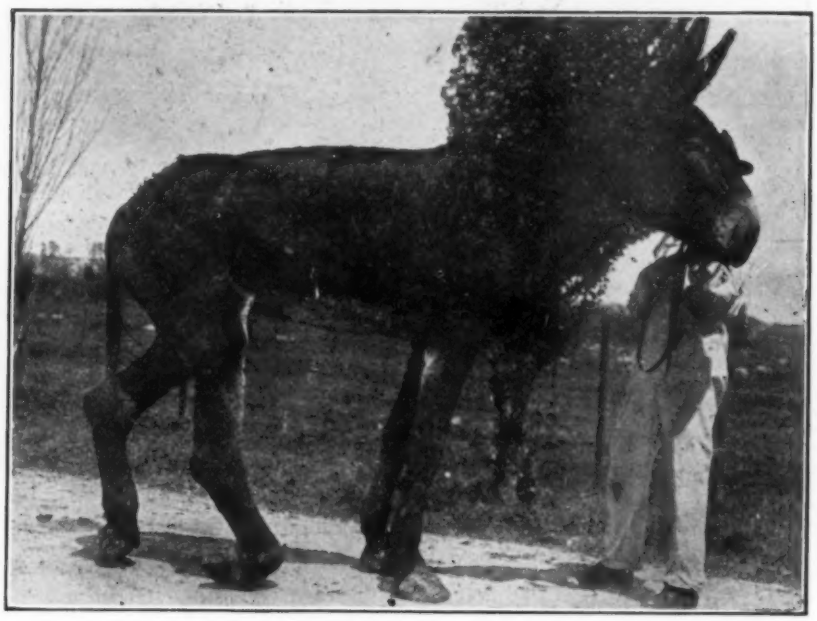
Microscopical examination was conducted on sections taken from all the affected tissues. These demonstrated conclusively the presence of a melanotic sarcoma.

No melanotic or sarcomatous condition was found in any other tissues.

CHRONIC TENDINITIS.

From Veterinary Division, Kans. State Agr. College.

A jack weighing about 900 pounds was presented at the veterinary clinic of the Kansas State Agricultural College on the 30th day of April, 1919, with the following history:



CHRONIC TENDINITIS BEFORE OPERATION.

According to the owner the animal appeared lame in the right hind limb about 18 months ago, and 6 months ago the foot knuckled under so the weight was supported on the anterior coronary region. According to the owner the animal also appeared

to have some trouble with the left hind limb, but in his opinion this was not serious and did not require attention.

Symptoms: Temperature, pulse and respirations were normal. The right hind fetlock was extremely flexed so that the solar surface of the foot was turned up and the animal's weight was borne on anterior coronary region. The left hind foot rested upon the anterior margin of the toe. The flexor tendons of both hind limbs were thickened, though not sensitive to pressure.

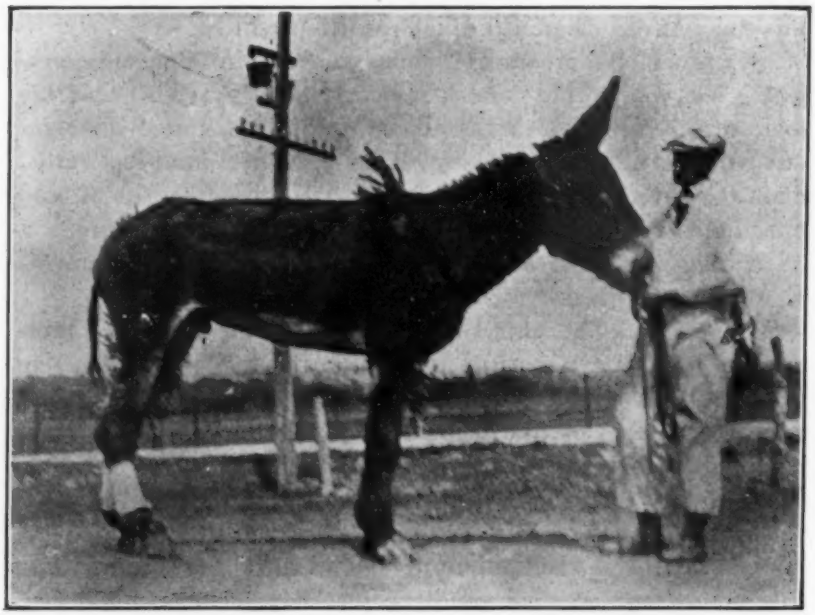
A diagnosis of chronic tendinitis was made and an unfavorable prognosis given.

Treatment: The animal was placed on the operating table and by following the usual technique, the tendon of the deep flexor of the left limb was divided so that the left hind foot could readily be placed in a normal position. In the case of the right hind limb the deep tendon was also divided, but it was believed, owing to the fact that this limb had been in its abnormal position for such a long time, it would not be possible to straighten the phalangeal region, and therefore the superficial flexor was also divided so that the foot could be placed in a normal position. Immediately after the operation the attention of our students was called to the fact that in our experience cases in which there was extreme flexion did not as a rule do well after an operation because, while the foot would assume a normal position, the phalangeal bones would not always adapt themselves to the new condition and degenerative changes might be expected.

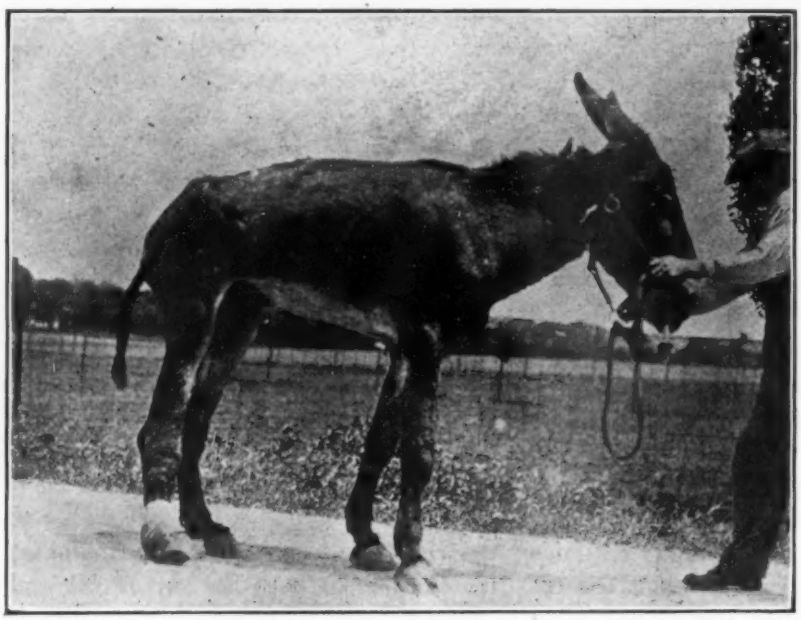
The left hind limb did well and caused no trouble. The right hind limb below the hock became considerably swollen, especially so in the phalangeal region, and about 2 weeks after the operation degenerative changes manifested themselves by intense œdema and the presence of small abscesses. A week later the fetlock region broke down completely so that the animal bore its weight on the posterior surface of the phalangeal region. The general condition of the patient remained good during all this time, but the condition of the limb was considered hopeless and the animal was therefore destroyed.

A medial section of the left hind limb below the tarsal region demonstrates that the space between the divided ends of the deep flexor had filled in properly.

A similar section of the right hind limb also indicated that the space between the divided ends of both the superficial and deep flexors had filled in properly and therefore that portion of



CHRONIC TENDINITIS IMMEDIATELY AFTER OPERATION.



CHRONIC TENDINITIS A FEW WEEKS AFTER OPERATION.

the operation had terminated successfully; however, this section also indicated that the first phalanx had been unable to adapt itself to the changed relations and therefore nature was attempting to form a new joint between the antero-inferior ex-

CHRONIC TENDINITIS. MEDIAL SECTION OF RIGHT HIND LEG.

tremity of the first phalanx and the second phalanx. This had resulted in intense inflammatory and degenerative changes which had manifested themselves outwardly by swelling and abscess formation.

CIRCULATORY FILARIASIS.

From Veterinary Division, Kans. State Agr. College.

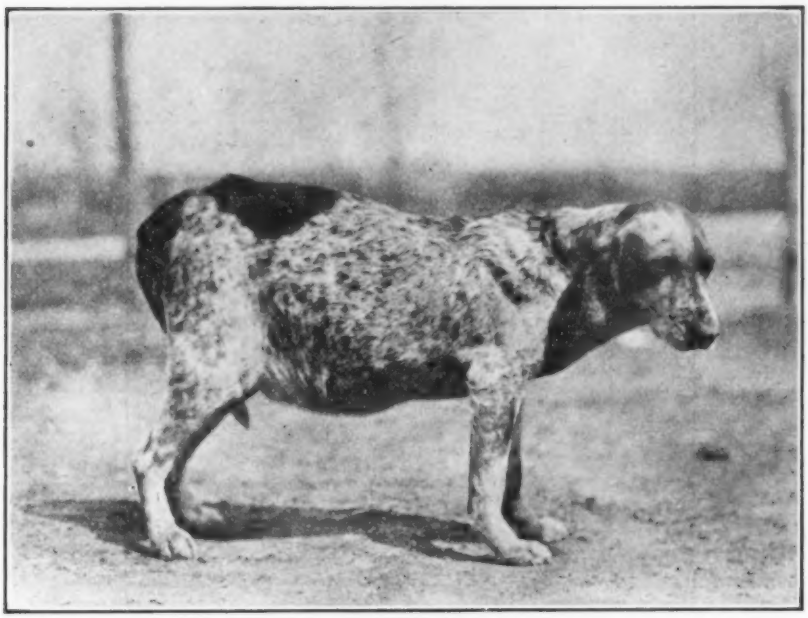
A male hunting dog, 4 years old, was presented at the veterinary clinic of the Kansas State Agricultural College on 18th of March, 1919, with the following incomplete history:

About ten days or two weeks previously the owner noticed that the dog was showing enlargement of the abdomen which had been increasing in size daily.

Symptoms:—Temperature 100.6, pulse 110 and very irregular, respirations 18.

Conjunctiva and other visible mucous membranes very anemic. Breathing laborious and abdominal in character.

The abdomen was twice its normal size owing to the presence of what was believed to be ascitic fluid. The hind limbs were edematous.



CIRCULATORY FILARIASIS.

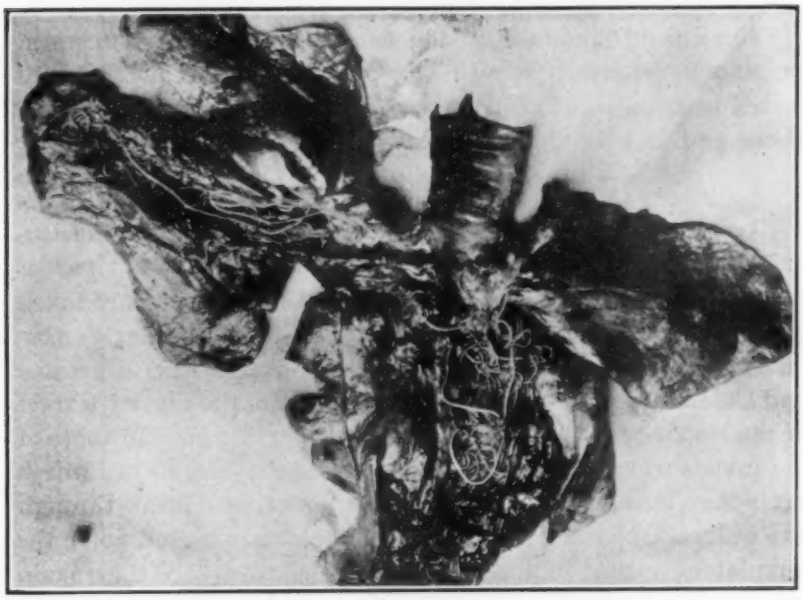
A tentative diagnosis of valvular insufficiency was made, and an unfavorable prognosis given. No treatment was attempted.

The animal was killed on the 19th of March. Dr. L. R. Vawter, instructor in Pathology in the Division of Veterinary Medicine, Kansas State Agricultural College, submits the following postmortem report:

Gross appearance of cadaver revealed marked ascites and edematous swelling of the posterior extremities. The latter condition extending from the gluteal region to the tarsus in each

limb. Upon removal of the skin a very marked dropsical infiltration was evident at the above regions.

The abdominal cavity contained about one and one half gallons of sero-sangineous exudate. The liver exhibited a rough uneven surface and on the interior surface immediately below the portal vein was an area where the capsule had apparently ruptured allowing the escape of blood into the abdominal cavity.



HEART AND LUNGS OF DOG AFFECTED WITH CIRCULATORY FILARIASIS.

Microscopic examination of sections from the liver revealed passive congestion associated with marked fatty infiltration.

HEART

The marked dilatation of the right ventricle was very apparent upon gross examination of the organ.

The heart was opened in a manner so as to expose the auriculo-ventricular valves and the semilunar valves. A tangled mass of Filariæ immites (Diero filaria) were found extending through the right auriculo-ventricular orifice thus preventing proper closure of the valves. The tangled mass of Filariæ immites extended continuously into the right ventricle and then followed the lumen of the pulmonary artery into right and left lungs. The largest mass of filariæ was evident in the right

lung where the primary branches of the pulmonary artery contained numerous filariæ. The filariæ were absent in the left side of the heart and common aorta.

The ascites was probably due in part to cardiac disturbance caused by the presence of filariæ and the escape of blood due to rupture of hepatic vessels through the capsule of the liver during the period of violent exercise during a hunt.

Morphology and Life cycle of Filaria immitis.

The Filaria immitis is a long slender thread-like white worm ranging in length of 6 to 8 inches in the males, and 8 to 10 inches in females. The larvæ are found in fresh blood preparations and usually about one sixteenth of an inch in length.

LIFE CYCLE

According to Bancroft, Noe, Fullehorn and others the embryos which are already freed in the body of the viviparous female enter the blood stream of the host. The larvæ are taken up from the host blood by sucking insects particularly mosquitos, namely Anopheles maculipennis, Anopheles bifurcatus and Culex fatigans. The larvæ migrate from the digestive tract of the blood sucking insect into the excretory malpighian tubes of the insects where they undergo developement. In 10 to 12 days after they have been taken up by the insect they break through the walls of the malpighian tubes of the mosquito and enter the circulatory system of the suctorial appendage where they again migrate through the walls of the suctorial appendage during the biting period of the insect and gain entrance to the blood stream of the vertebrate host.

The filariæ are sometimes found in the subcutis exclusively, but none were found in this region in this dog. In so far as we could determine the filariæ were absent from kidneys, spleen and liver.

GENERALIZED TUBERCULOSIS OF THE HORSE.

M. F. Barnes, V. M. D.,
From the Division of Laboratories of the Pennsylvania Bureau of Animal Industry.

On April 4, 1919 our laboratory received a specimen consisting of a section of lung and a section of spleen of a horse, with the history that the horse from which the specimens were

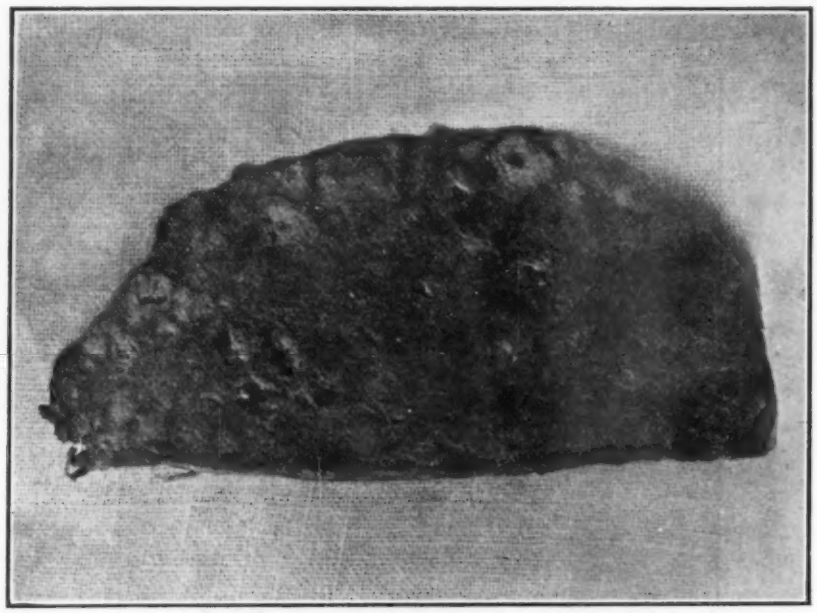
taken was a bay gelding, about 8 years old, weighing about 950 pounds and had been a healthy individual since about five years ago when he had distemper, until just about eight weeks prior to April 4th when he developed a dry cough, became sluggish, easily exhausted and sweat very easily. Some time later his appetite became decreased, the cough became more pronounced,

No. 1. SECTION OF SPLEEN OF HORSE SHOWING TUBERCULOUS LESIONS.

the temperature becoming somewhat elevated. About ten days prior to death he showed symptoms of pleurisy and hydrothorax, also edematous swelling of the infrasternal region and an elevation of temperature to 105 degrees Fahrenheit. These symptoms disappeared about three to four days previous to death. During the later stages of the disease the animal rapidly became emaciated and the appetite became very much decreased.

The owner of this horse at the time of its death, had owned

him for three years and had kept him in a basement barn where at least one other horse and some cows were kept, all of which have apparently been in good physical condition although a tuberculin test has never been made.



No. 2. SECTION OF LUNG OF HORSE SHOWING TUBERCULOUS LESIONS.

The report of autopsy upon this animal shows that there was a fibrinous pleurisy; lymph glands were hemorrhagically swollen; otherwise the spleen and the lungs were the only organs affected, the latter showing evenly distributed lesions throughout their substance.

Upon examination of the section of lung and spleen received at the laboratory, the former presented cheesy necrotic areas throughout its substance varying in size up to about one half inch in diameter and many of these confluent. The spleen showed numerous circular abscesses throughout the section and measuring from miliary size up to one half inch in diameter.

Smears and sections of the affected lung and spleen revealed numerous acid fast bacilli characteristic of the bacillus of tuberculosis.

The following laboratory animals were inoculated with a saline emulsion of pus from these specimens:—

No. 449. Rabbit. Inoculated subcutaneously April 4, 1919. Died June 3, 1919. Generalized tuberculosis.

No. 450. Rabbit. Inoculated subcutaneously April 4, 1919. Died July 5, 1919. Generalized tuberculosis.

No. 451. Guinea pig. Inoculated intraperitoneally April 4, 1919. Died April 20, 1919. Generalized tuberculosis.

No. 452. Guinea pig. Inoculated subcutaneously April 4, 1919. Died May 23, 1919. Generalized tuberculosis.

From the above experiment it appears that the strain of tubercle bacillus under study was of the bovine type.

The source of the infection of this horse is not known but inasmuch as this animal was stabled in a basement barn with cattle it is quite probable that there has been a bovine spreader of the disease in the stable at some time leaving the stable or feed contaminated with tubercle bacilli of the bovine type.

Several cases of tuberculosis of the horse have been reported although when the situation is summed up the disease is comparatively rare in the equine family and especially is this true of generalized tuberculosis. Most cases that have been reported have shown more or less localized lesions.

Such a case as this must certainly have an important bearing upon attempts to eradicate tuberculosis of cattle. This animal having had open tuberculosis of the lungs must have been the spreader of millions of tubercle bacilli. It seems then that one who is attempting to rid a herd of cattle of tuberculosis in a barn where other species of animals are also kept, at least from an economic standpoint, should look to, and make an inspection of other animals.

HEMORRHAGIC SEPTICEMIA IN HOGS.*

G. A. JOHNSON, Sioux City, Iowa.

This herd consisted of approximately eighty-eight shoats and seven two-year-old sows. The sows had been immunized against the filterable virus as pigs in 1917, but the shoats had not been immunized.

So far as the owner could determine the pigs appeared all right until the evening of December 6, 1918, when five or six

* Presented at recent meeting of the Iowa Veterinary Association, Ames, Iowa.

did not come out to feed and on the morning of the 7th, about fifteen were off feed.

I first saw the herd late in the afternoon of this date, when we found about thirty off feed, and presenting the following symptoms: loss of appetite, slightly gaunted, dry hacking cough on being driven out of their bed, a marked distressed appearance manifested by the ears drooping, back arched, hair standing, and disinclination to move.

Quite a number were thumping, some badly, others only slightly, bowels appeared normal, eyes had a drowsy appearance but no discharge, temperatures running from around 104° to 106°, mostly 104° to 105°F.

Some of those that were eating presented as high temperatures as those that were sick.

Post mortem of pig No. 1, showing thumps, temperature 105°, ears drooping, back arched, hair standing, slight cough on being made to move, bowel excretions normal.

Lesions: cervical lymph glands slightly enlarged and hyperemic at the periphery, lungs presented small, moist, pinkish-gray consolidated areas in the anterior lobes, with a few filariæ in the posterior, inferior portion of the caudal lobe. Bronchial lymph glands considerably enlarged and of a bright pink color at the periphery. Heart presented a par-boiled appearance. Abdominal viscera appearantly normal.

On the forenoon of December 8 about seventy-five head, including one of the old sows, were off their feed, and presenting about the same symptoms as were observed the evening before. This was about double the number off feed about sixteen hours earlier. Most of those sick the evening before appeared about the same, though some appeared worse, especially as to the thumping. Temperatures were a little higher, a few up to 106° and one 107°F.

Post mortem of pig No. 2, presented lesions very similar to those of pig No. 1, except that the lesions in the lungs were a little more extensive, and the heart presented an extensive, acute, vegetative pericarditis and myocarditis. The lungs and heart were taken to the laboratory for microscopical examination which revealed an abundance of bipolar staining micro-organisms, *B. suisepticus*.

One pig that presented a temperature of 104.5°F. and quite severe thumps, with irregular and labored heart action, was ta-

ken to Doctor Statter's hospital and given a large dose of anti-hog cholera serum and a dose of mixed bacterins. It made an uneventful recovery.

The remainder of the herd did not receive any treatment and there was a loss of only five head at last report, January 4, 1919.

At the time of my visits I was pretty certain that it was an outbreak of swine plague, which was confirmed by the laboratory work so far as it went. But the apparent severity of the outbreak and the rapidity with which it spread through the herd led me to suspect the presence of the filterable virus, although none of the lesions ordinarily attributed to this were present. This view was somewhat strengthened by the fact that a pig from this drove had been posted by the veterinarian in charge of production at one of the serum plants, with the diagnosis of suspicion of cholera. This was on the date of my first visit.

Judging from the conditions as they appeared to me at that time I did not think that enough animals could be saved to pay for the serum treatment, consequently no treatment was given.

In the after light of this case it is plain that I made at least two mistakes:

First, that the filterable virus was not present, or if it was we must change our ideas relative to its pathogenicity.

Second, that despite appearances the disease was not of a fatal type.

Again, if treatment had been given and the results had been as satisfactory as they were without, it would have led to the false belief that the treatment had checked the disease and saved the animals.

TETANUS IN PIGS.

H. N. Waite, Corsica, S. D.

A farmer near here had over a hundred shoats about three months old. Among them were fifty-seven males which he had castrated just a week before. I was called out to see them. The owner told me that his pigs were sick with a funny sickness; said they got stiff and he thought it was lock-jaw. Five had died and two were showing the symptoms of tetanus. We talked it over and I advised him if any more showed symptoms to let me know and we would give them antitoxin. I didn't see or

hear from him again until July 4th, when the owner told me that thirteen had died and some were showing symptoms every day. We immunized thirty-six of the thirty-seven with 300 units each of antitoxin. Five of the thirty-seven cases could not walk. One we considered a hopeless case and didn't expect any of the five to pull through. Every one up to this time that had shown the symptoms had died. After treating them there was not another case developed and three of the four showing the symptoms recovered. They were treated about two weeks after they were castrated. I had never heard of a case of that kind and never heard of giving treatment to pigs and didn't know how much to give, so it was just an experiment but the results were satisfactory.

The following list of graduates of the class of "19" New York University, received their diplomas and prizes on Commencement Day:

Abramson, Alexander Henry; Benson, Clarence Oakley; Carabba, Victor (Prizes: Faculty Gold Metal, Canine Surgery and Therapeutics); Felder, Morris; Koslow, Harry Louis; Kreindler, David Arnold (Prize: W. W. Yard, 1st Practical Prize); Lebish, Jacob (Prize: Alumni Prize); Speveck, Victor (Prize: W. W. Yard, 2nd Practical Prize); Wright, James Mathews.

The West Virginia State Veterinary Examining Board held its regular examination at the Kanawha Hotel, Charleston, on June 1st, and the following applicants passed: Dr. Taylor, Richie County, W. Va., and Dr. D. C. Mollody, of Oakland, Md.

The new board consists of

Dr. E. M. Spangler, President.
Dr. J. C. Callender, Vice-President.
Dr. W. E. Langford, Secretary.

The Lederle Laboratories at Pearl River, N. Y., have among their group of Veterinarians representatives of several of our veterinary schools. At the head Prof. Adolph Eichhorn of the New York American Veterinary College, Dr. Chas. H. Higgins of the Montreal Veterinary College, Dr. Sven Isaacson Ryan and Dr. John P. O'Leary of the Veterinary Department of the University of Pennsylvania, and Dr. J. F. Schubert of New York State Veterinary College at New York University.

ABSTRACTS.

MOST STRENUOUS LABOR, A CONDITION PRELIMINARY TO IMPORTATION OF MEAT AND OTHER FOODS FROM ABROAD.[1]

By R. v. OSTERTAG,
Zeitschrift fur Fleisch-und Milchhygiene; Vol. 29, February, 1919; pp. 113-115.

As the terrible war ended and the democratic form of government was instituted, the German people believed, that now their unexampled suffering and hunger lasting years, to which may be attributed the many deplorable effects on their mental and physical beings, will have an end. The German people have read in the enemy press that they have nothing against the German people, and from that concluded that after cessation of hostilities, the shackles on our income of food would be loosened, and it would be possible to obtain from the excess supplies overseas, if only in small lots at first, in order to better our starvation diet. This hope has not been realized! On the contrary, the blockade has been tightened, and more than two months have elapsed since the conclusion of the armistice, without a single overseas importation having been possible. But now it is at least clear, from recent conferences with American and Entente representatives at Treves, what we may expect from America and under what conditions. And these terms are a terrible warning to the German people. Their disregard leads Germany irretrievably into famine!

The Under-secretary of State in the Imperial Nutrition Office, Excellency v. Braun, who presided at the German Commission on Nutrition at the armistice, stated to a newspaper reporter that the Entente had agreed to an emergency allowance for the period of the armistice, of food equivalent to 30 million dollars to be fed to invalids, children, expectant and nursing mothers, and certain workers. It was stipulated that our entire merchant fleet, in seaworthy condition, be placed at the disposal of the Entente. If the repair and equipment of the boats are carried out immediately and their departure from German ports in no wise delayed, the emergency deliveries may be expected

[1] Translated by William N. Berg, Washington, D. C.

in 2 to 3 weeks. The amount of food that may be obtained for 30 million dollars at present world-market prices, is not very large. From statements obtained from the German Commission on Nutrition, the following kinds and quantities of foods may be considered: 70,000 t pork products, mainly bacon and lard and other fats; 50,000 t wheat and smaller amounts of condensed milk, oatmeal, rice, and meat extract. It is to be noted that these quantities will suffice only for invalids and other needy individuals and not for the general improvement of nutrition. With regard to the further supply for Germany, the representatives of the Entente and America have stated, that the world's supplies of fats and cereals are ample for the entire world's needs. The revictualing of Germany is dependant only upon our compliance with the terms. *The prevention of the threatening famine lies in our hands. Labor is necessary for the prevention of this famine, unremitting and most strenuous labor in order to provide material as rapidly as possible for foreign payment of the promised food supplies.* The important materials are coal, potash salts and manufactured articles. What has happened to the output of these commodities? Strikes and senseless wage demands have so diminished the coal output that during the entire war, in spite of the tremendous consumption of coal by the munition plants, we were never so poorly provided as now. Therefore, at the present time coal cannot be exported, and all industrial establishments suffer from its scarcity, among them, the potash industry which furnishes one of our most valuable commodities in exchange for food. Every additional day of insufficient coal production increases the danger of famine. On these matters the German people do not seem to see clearly. Otherwise it would be difficult to understand why the people, in these most trying times through which Germany has ever passed, instead of uniting for earnest productive work, give themselves over to strikes and phantastic wage demands which continually depress the foreign purchasing power of our money and render our manufactured goods unsaleable because too expensive. It is therefore the sacred duty of every one, by word and deed, through example and instruction to explain to the worker, his wife and children, that disaster will overtake us if we do not work perseveringly to earn the food from abroad and that we will not become richer but poorer if all demand multiples of present day wages. This results in our

paying so much more for our necessities and we will not be able to purchase anything abroad because of the high price of our commodities coupled with the depreciation of our money.

Russia is a warning. One should read the short account by Jenny (in the Mitteilungen der Deutschen Landwirtschafts-Gesellschaft 1919 Stück 4) of the Russian agriculture under the present regime and perceive in his dispassionate descriptions the conclusive tragedy of the devastation of city and country in the formerly great Russian Empire, which had the advantage over Germany of having an excess of land productive of foods and feeds, and capable of existing without imports. One reads how phantastic wages, driven past all possible agricultural limits, have separated capital and labor, damming both to sterility. How "stupid equality" destroyed agricultural productiveness. How violent, work-detesting elements through the formation of local Soviets have become tyrants and terrorize the active country people. How one hears in the country the same "terrible groans and sighs" and the same "death-rattles of tortured men" as in the cities. How starving city people go out into the country to take food by force; how tumultuous mobs of peasants from regions of crop failure travel to better land to plunder it and as a result of such occurrences, the curse of complete lawlessness and the war of all against all reigns in the giant Empire.

Labor and more labor, rigorous state regulation, and the postponement of hazardous agricultural experiments to more favorable times, must and shall preserve the German people from such a fate.

"THE ETIOLOGY AND TREATMENT OF GRANULAR DERMATITIS."

"The etiology and treatment of granular dermatitis, R. Van Saceghem (Bul. Soc. Path. Exot., 11 (1918), No. 7, pp. 575-578; abs. in Trop. Vet. Bul., 6 (1918), No. 3, pp. 171-173).—Further experiments confirm the author's view that flies are the vectors of Habronema larvæ, the cause of summer sores, as previously expressed, and proved that the parasites found in the verminous nodules is an aberrant larva of *H. muscæ*. This substantiates the view of Railliet and Henry.

"Horses affected with granular dermatitis often showed conjunctivitis, and this was found to be set up by the presence of small verminous nodules located especially on the membrana nictitans."

A curative treatment regarded by the author as specific consists in the careful disinfection of the sore and then the application of a powder consisting of plaster of Paris 100, alum 20, naphthalin 10, and quinin 10 parts, or a sufficient quantity of any other bitter powder. This powder protects the sore against flies, is very adhesive, rapidly dries up the sore, and the bitter ingredient prevents the animal from biting itself. It prevents further infection with larvæ, and those already present become encysted and are eliminated without causing any damage. All the sores treated in this way become rapidly cicatrized. Care should be taken to renew the plaster as long as the slightest breach in continuity of the surface remains.

—*Experiment Station Record.*

FIELD DAY AND MEETING IN MASSACHUSETTS.

The Massachusetts Veterinary Medical Association will hold a Field Day and Meeting in Springfield Wednesday, September 17th, and possibly including the 18th.

The meeting will be at the Eastern States Exposition Grounds where a room has been reserved for headquarters, and the reading of such papers as may be presented. However, the meeting is being held at this time to enable the members to take advantage of the Exposition, which has the unique record of having staged the most successful meeting of the National Dairy Show in its twenty, or more, years of existence. All the "boys" in the East are cordially invited to this meeting, where there will be some one to receive them and direct them to the different places of interest.

Dr. W. O. McHugh has been recently transferred from Cleveland, Ohio, to Huntington, W. Va., where he is in charge of meat inspection.

Capt. E. F. Pile, who has been serving with the A. E. F. for the past year, expects to return shortly and upon his return will again locate at Liberal, Kansas.

ARMY VETERINARY SERVICE

FROM THE OFFICE OF THE SURGEON-GENERAL OF THE ARMY, WASHINGTON, D. C.

OFFICERS, VETERINARY CORPS, UNITED STATES ARMY.

	On Duty.	
	July 11, 1919.	Aug. 11, 1919.
Colonels	0	0
Lieutenant Colonels	6	5
Majors	68	54
Captains	182	119
First Lieutenants	382	255
Second Lieutenants	357	178
Totals	995	611

The following orders of transfer or reassignment have been issued for veterinary officers during the past month:

1. Lieut. Colonel Robert Vans Agnew, V. C., who has just returned from service overseas, is directed to report for duty as Post Veterinarian, Fort D. A. Russell, Wyoming.

2. Lieut. Colonel Richard H. Powers, V. C., who has just returned from service overseas, is directed to report for duty as the Veterinarian, Auxiliary Remount Depot, Camp Pike, Arkansas.

1. Major B. A. Seeley, V. C., who has just returned from duty overseas, is directed to report for duty as the Veterinarian, Auxiliary Remount Depot, Camp Upton, N. Y.

2. Major W. J. Ratigan, V. C., who has just returned from service overseas, is directed to report to West Point, Ky., for duty as Camp Veterinarian, Camp Knox, Ky.

3. Major Charles H. Jewell, V. C., from duty at Camp Dix, N. J., to Washington, D. C., for duty in the Office of the Surgeon General, Veterinary Division.

4. Major Burt English, V. C., who has just returned from overseas where he served as the Corps Veterinarian, 5th Army Corps, is directed to proceed to Auxiliary Remount Depot, Camp Lee, Va., for duty as the Veterinarian.

5. Major William C. Van Allstyne, V. C., from duty as the Veterinarian, 6th Cavalry, to Fort Oglethorpe, Ga., for duty as the Veterinarian.

6. Major Thomas H. Edwards, V. C., from duty at Camp Sheridan, Ill., to Auxiliary Remount Depot, Camp Jackson, S. C., for duty.

7. Major Henry W. Peter, V. C., who has just returned from duty overseas, is directed to report for duty as the Veterinarian, Fort Bliss, Texas.

8. Major A. Mitchell, V. C., who has just returned from duty overseas, is directed to report for duty as the Veterinarian, Auxiliary Remount Depot, Camp Funston, Kan.

9. Major Joseph N. Hornbaker, V. C., is relieved from duty in the Office of the Surgeon General, Washington, D. C., and directed to proceed to the Philippine Islands on the transport sailing about September 5, 1919, for duty as Assistant to the Department Surgeon, Philippine Department.

TREATING ARMY HORSES FOR MANGE OVERSEAS.

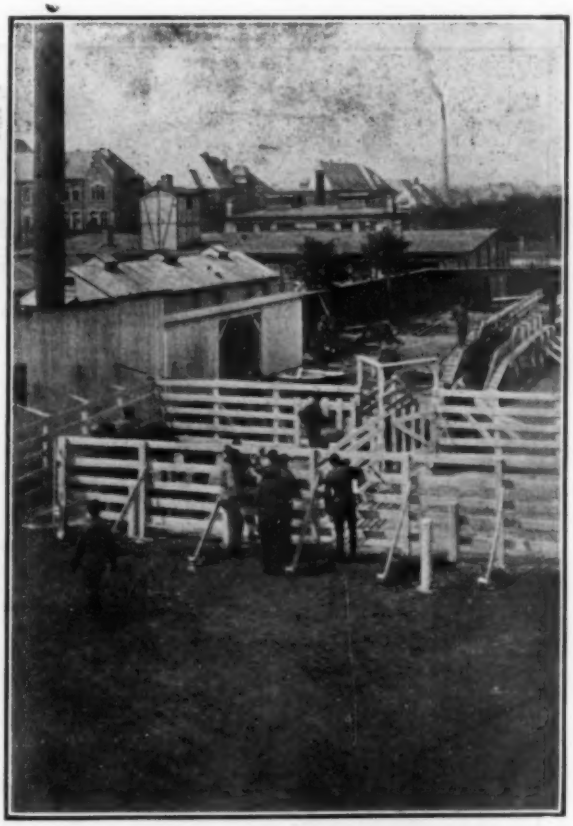
A TYPICAL CASE OF MANGE.
Showing the system of marking horses. May 26, 1919.

10. Major Walter Fraser, V. C., who has just returned from service overseas, is directed to report to Fort Sill, Okla., for duty as the Post Veterinarian.

11. Major J. H. Uri, V. C., who has just returned from duty overseas, is directed to report for duty as Camp Veterinarian, Camp Gordon, Ga.

12. Major G. H. Koon, V. C., who has returned from duty overseas, is directed to report for duty as Camp Veterinarian, Camp Dodge, Iowa.

13. Major J. J. Connolly, V. C., from duty as Division Veterinarian, 6th Division, is directed to report to the Zone Supply Officer, Chicago, Ill., for instruction in meat inspection.



THE DIPPING VAT.

Showing the shed which houses this steam-heating plant for keeping the solution in the vat warm.

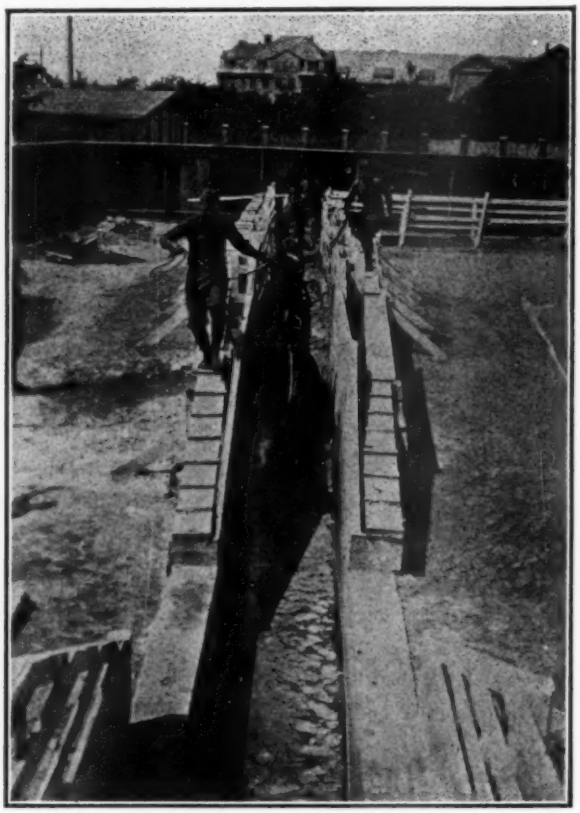
3d Army Veterinary Evacuation Section No. 3, Coblenz, Germany, June 1, 1919.

14. Major A. E. Donovan, V. C., is directed to report for duty as Division Veterinarian, 6th Division, Camp Grant, Ill., in addition to his other duties.

1. Captain D. S. Robertson, V. C., from Camp Lee, Va., to Zone Suply Officer, Chicago, Ill., for a course of instruction in meat inspection.

2. Captain Edward M. Curley, V. C., from duty in the Office of the Surgeon General, Washington, D. C., to Fort Leavenworth, Kansas, for duty as the Veterinarian, U. S. Disciplinary Barracks, that post.

3. Captain Edward P. O'Connell, V. C., from duty in the Office of the Surgeon General, Washington, D. C., to Auxiliary



DOWN THE SLIDE TO A LIME AND SULPHUR BATH.
3rd Army Veterinary Evacuation Section No. 3, Coblenz, Germany, June 1, 1919.

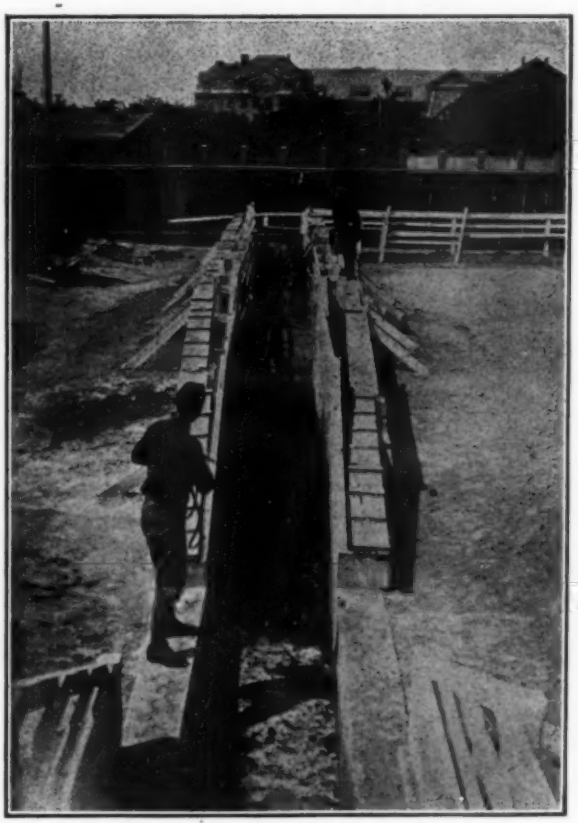
Remount Depot, Camp Devens, Mass., for duty as the Veterinarian.

4. Captain Robert P. McComb, V. C., from duty Camp Devens, Mass., to Zone Supply Officer, Chicago, Ill., for a course of instruction in meat inspection.

5. Captain J. R. Underwood, V. C., from Camp Dix, N. J., to Fort Riley, Kan., for duty at the Mounted Service School as Instructor.

6. Captain C. C. Bourland, V. C., from Fort Des Moines, Iowa, to Camp Fort Bliss, Texas, for duty as Veterinarian with 82nd Field Artillery.

7. Captain P. R. King, V. C., from Fort Bliss, Texas, to Canal Zone, Panama Canal Department, for duty.



THE PLUNGE.
3d, Army Veterinary Evacuation Section 3, Coblenz, Germany, June 1, 1919.

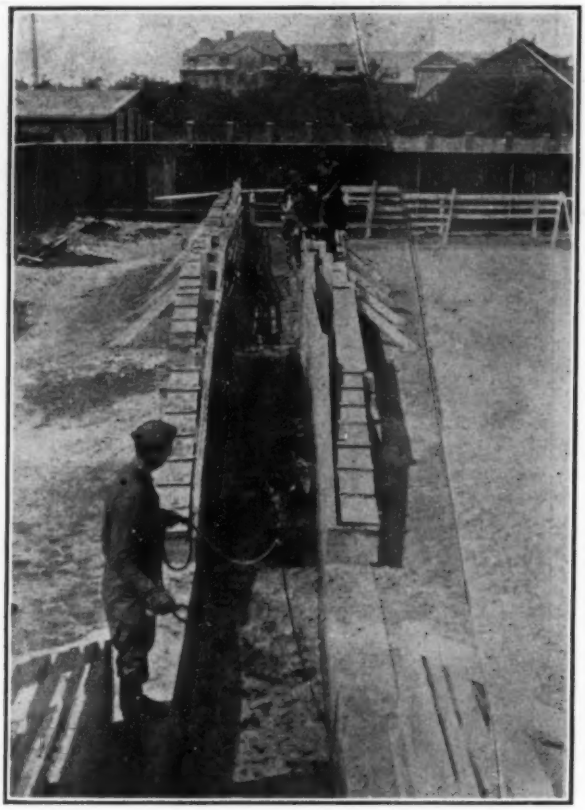
8. Captain H. E. Homer, V. C., from Hoboken, N. J., to Camp Bragg, N. C., for duty as Camp Veterinarian.

9. Captain A. C. Wight, V. C., from Camp Dix, N. J., to Camp Humphreys, Va., for duty.

10. Captain George W. Brower, V. C., relieved from duty in the Philippine Department on the arrival of Major Hornbaker, and will proceed to the U. S. on the first available transport.

11. Captain H. R. Holmes, V. C., from A. R. D., Camp Upton, N. Y., to Commanding Officer, Fort Jay, Governors Island, N. Y., for duty as Post Veterinarian.

1. 1st Lieut. C. F. Morris, V. C., from duty at Camp Funston, Kan., to Commanding Officer, that Camp, for duty as assistant to Camp Veterinarian.



JUST COME UP FOR THE SWIM OUT.
3d Army Veterinary Evacuation Section No. 3, Coblenz, Germany.
June 1, 1919.

2. 1st Lieut. L. V. Murrian, V. C., from Camp Dix, N. J., to A. R. D., Camp Travis, Tex., for duty.

3. 1st Lieut. J. R. Shand, V. C., from San Francisco, Calif., to Camp Dix, N. J., for duty as assistant to Camp Veterinarian.

4. 1st Lieut. D. H. Mallan, V. C., from duty at Camp Grant, Ill., to Zone Supply Officer, Chicago, Ill., for instruction in meat inspection.

5. 1st Lieut. W. O. Hughes, V. C., from Camp Dix, N. J., to A. R. D., Camp Gordon, Ga., for duty.

6. 1st Lieut. S. D. Stroly, V. C., from Camp Upton, N. Y., to Zone Supply Officer, Chicago, Ill., for instruction in meat inspection.

7. 1st Lieut. O. E. Markley, V. C., from Camp Dix, N. J., to A. R. D., Camp Gordon, Ga., for duty.

8. 1st Lieut. J. N. Dornblaser, V. C., from Camp Dix, N. J., to Fort Riley, Kan., for duty as instructor in the Mounted Service School.

9. 1st Lieut. N. L. Cline, V. C., from duty with Zone Supply Officer, Chicago, Ill., to Fort Sill, Okla., for duty as assistant to Post Veterinarian.

10. 1st Lieut. F. E. Metcalf, V. C., from Camp Taylor, Ky., to A. R. D., Fort Bliss, Tex., for duty.

11. 1st Lieut. R. I. Lovell, V. C., from Camp Dix, N. J., to Marfa, Tex., for duty with 8th Cavalry.

12. 1st Lieut. G. Castleberry, V. C., from duty with 82nd F. A., Fort Bliss, Tex., to Fort Ringgold, Tex., for duty with 4th Cavalry.

13. 1st Lieut. J. A. McCallan, V. C., from duty with 4th Cavalry, Fort Ringgold, Tex., to Zone Supply Officer, Chicago, Ill., for instruction in meat inspection.

14. 1st Lieut. R. M. Sarde, V. C., from Camp Dix, N. J., to Remount Depot, Front Royal, Va., for duty.

1. 2nd Lieut. R. E. Smith, V. C., from Camp Upton, N. Y., to A. R. D., Camp Custer, Mich., for duty.

2. 2nd Lieut. H. J. Boyce, V. C., from Camp Dix, N. J., to Commanding Officer, the Camp, for duty as assistant to Camp Veterinarian.

3. 2nd Lieut. S. G. Kielsmeier, V. C., from Camp Mills, N. Y., to Fort Bliss, Tex., for duty with 5th Cavalry.

The following officers have resigned from the Veterinary Corps during the past month:

Captain J. N. Graves, 2nd Lieut., Regular Army.
1st Lieut. W. A. Aitken, 2nd Lieut., Regular Army.
1st Lieut. C. E. Fanslau, 2nd Lieut., Regular Army.
1st Lieut. A. G. Gierke, 2nd Lieut., Regular Army.
1st Lieut. J. W. Hastings, 2nd Lieut., Regular Army.
Captain N. M. Neate, 2nd Lieut., Regular Army.

LIEUT. COLONEL L. A. MERILLAT, U. S. A.

Lieut. Colonel Merillat was commissioned direct from civil life as a Major, National Army, October 5, 1917, and assigned to duty as Division Veterinarian, 41st Division with station at Camp Greene, N. C. He reported for active service October 16, 1917, at that camp. Transferred from Camp Greene to Camp Mills, N. Y., on October 24th and was stationed there until December 11, 1917. Left United States on that date, arriving in France December 29, 1917. Proceeded to Camp La Courtine, France, where he was stationed until January 6, 1918.

Acted as Chief Veterinarian, Advance Veterinary Hospital, Neuchateau (Vosges) from January 10th to April 28th. This was the first A. E. F. Veterinary Hospital and was organized, equipped and enlarged from the capacity of 700 to 1200 animals. The first sulphuration plant of A. E. F. was built and operated at this hospital. A research laboratory was installed and operated with this hospital by Lieut. Strausse, M. C., and Lieut. Wight, V. C.

On April 24th, Col. Merillat was relieved from duty at this hospital and appointed executive officer for the Franco-American Veterinary Liaison Mission, Paris, in which capacity he served until August 1, 1918. The mission submitted circulars to the American army on the management of animals and the handling of the principal animal scourges, inspected remounts, veterinary hospitals and organizations of the line and made recommendations on the sanitary problems involved in the requisitioning of approximately 75,000 horses from French civilians.

He was appointed Chief Veterinarian, 1st Army, A. E. F., on August 1, 1918, and served in this capacity until February 23, 1919. With the first army, he served through the last phases of the Aisne-Marne operation and through the battles of St. Mihiel and Meuse-Argonne. The average number of animals in the First Army during the St. Mihiel and Meuse-Argonne

operations was about 93,000 head. The Veterinary Corps of the First Army during these operations evacuated under the directions of Col. Merillat approximately 23,000 disabled animals. Assisted the veterinary service of the Third Army in the march to the Rhine going as far as the city of Luxemburg where the work was taken over by Lieut. Colonel Bemis who was appointed Chief Veterinarian, Third Army. Moved from the battlefields to the training areas with headquarters at Bar-Sur-Aub, December 5, 1918.

From February 23 to June 1, 1919, he attended the Ecole Veterinaire Nationale d'Alfort for the purpose of writing a report on the education of military veterinarians in France. June 1st to July 11, 1919, enroute to the United States, arriving in New York on the latter date. July 12 to 23rd, on leave of absence from Camp Dix, N. J.

Col. Merillat reported for temporary duty Office of the Surgeon General Veterinary Division, on July 23, 1919, and received his honorable discharge at Washington on the 25th.

The veterinary profession is justly proud of the services that Col. Merillat has performed in the Veterinary Corps during the war. Starting with an assignment as Division Veterinarian, Col. Merillat was exceedingly fortunate to have seen active service with combat troops and also with the service of supply when he was in charge of the Veterinary Hospital. It is only fitting that Col. Merillat's active army service should be crowned with one of the highest decorations that the French Government bestows upon foreign officers. While on duty in Washington, he was notified that he had been decorated with the Legion of Honor by the French Government.

MAJOR CHARLES H. JEWELL, V. C., U. S. A.

Major Jewell was assigned as Division Veterinarian, 80th Division, Camp Lee, Va., and reported for duty January 11, 1918. Left United States with this division on May 22, and arrived at Brest, France, May 30, 1918. The division was immediately assigned to the north of France and brigaded with the British army. Relieved from duty with the 80th Division July 26th and ordered to join the First Army then operating in the Chateau-Thierry district. This was the first time that a corps veterinarian had ever functioned with an American army corps. The work of organizing the corps veterinary service at this time was extremely difficult owing to the lack of lines of communica-

tion with regard to handling of the evacuation of sick animals. It was necesary to organize the evacuation system for sick animals at this time. On August 12th, he was relieved as Corps Veterinarian, First Corps, and assigned Third Corps Veterinarian, remaining in the same sector while the First Corps moved to a new area. Relieved from duty 3rd Corps October 7, 1918, and assigned to the 2nd Army as Army Veterinarian with headquarters at Toul, France. Organized the veterinary service 2nd Army until shortly after the Armistice when he was relieved and assigned to the 9th Army Corps with station at St. Mihiel, France. Remained with the 9th Army Corps until it returned to the United States. Arrived in New York City with the 9th Army Corps Headquarters on June 6, 1919, and assigned to Office of Surgeon General, Washington, D. C., for duty.

MAJOR GEORGE H. KOON, V. C., U. S. A.

On October 27, 1917, Major Koon was assigned as Division Veterinarian 82nd Division, Camp Gordon, Ga. Promoted to the grade of Captain, October 9, 1917. Transferred as Division Veterinarian, 32nd Division, on January 16, 1918. Sailed with that division from the United States for overseas service on January 31, 1918, arrived Liverpool, England, February 16, 1918, and sailed from Southampton, England, for La Havre, France, on February 26th.

The 32nd Division arrived in the 10th Training Area with headquarters at Prauthoy (Haute-Marne) March 1, 1918. It was the 6th division to join the A. E. F. On March 8th, Captain Koon was ordered to the "Service of the Rear" for temporary duty of purchasing animals from the French and was on this duty until April 29, 1918, when he returned to the 32nd Division. On May 15, 1918, the 32nd Division moved to the Alsace sector, remaining there until July 15, 1918, when it was moved by train to the Compiegne sector. Two days after the concentration of the division in the Compiegne sector it marched to the Marne, arriving at Chateau Thierry July 27, 1918, and on July 29th this Division relieved the 3rd Division on the Ourcq in the Aisne-Marne Offensive. August 28, 1918, the 32nd Division again entered the front line northeast of Soissons as a part of the French 10th Army. It was the only American unit operating with that Army and assisted in capturing strong German positions on the Juvigny plateau. The Division contributed to an important extent in the success of the French in

outflanking the German line on Chemin des Dames. Captain Koon served as Division Veterinarian 32nd Division throughout this offensive and on September 3rd, 1918, was relieved and promoted to act as Corps Veterinarian, 6th Army Corps. On September 13th, ordered to the 90th Division as Division Veterinarian in the St. Mihiel drive. Promoted to grade Major, U. S. A., September 27, 1918, and continued to act as Division Veterinarian with the 90th Division during the Meuse-Argonne Offensive. Relieved from duty with the 90th Division on December 5, 1918, ordered to 3rd Army Corps as Corps Veterinarian and served with this Corps on the march to the Rhine. The 3rd Corps was the most advanced American Corps in Germany and the only one to cross the Rhine, holding the most advanced territory with the 1st, 2nd and 32nd Divisions.

Relieved from duty with the Army of Occupation on July 9, 1919, and sailed from Brest, France, on July 16, 1919, with the 3rd Army Corps headquarters. Arrived in New York July 27, 1919, where the headquarters were disbanded after which Major Koon reported to the Surgeon General for assignment.

Major Koon is the proud possessor of five battle stars, he having actively participated in 4 offensives and 1 defensive.. This is an unusual record even for line officers.

Major Koon has been assigned as Camp Veterinarian, Camp Dodge, Iowa.

ELECTION TO DECIDE TUBERCULOSIS POLICY.

The first election in the United States to decide whether or not a county should eradicate tuberculosis from its herds of cattle has been ordered to be held in Clay County, Mississippi, September 2. The election was ordered by the county board of supervisors after a petition asking for it had been presented by a group of citizens. The results of this election will have much more than local interest, because the election may be the forerunner of hundreds or thousands of others in other sections of the country, according to the Department of Agriculture.—*Breeders Gazette,* July 31, 1919.

Two State Scholorships for New Jersey were announced on Alumni Day at the New York State Veterinary College, New York City.

ASSOCIATION NEWS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

President Moore has appointed Dr. Fred. Torrance, Ottawa, Canada, a member of the International Committee on Bovine Tuberculosis, to succeed Dr. J. G. Rutherford, who has resigned on account of pressure of other duties.

SECRETARY'S OFFICE.

The past few weeks have been rather quiet ones so far as the work of the Secretary's office is concerned, but not so for the Secretary, who has been undergoing a rather strenuous time in a hospital. However, the worst seems to be over. Next month statements for dues for the coming year will be sent out together with a letter to all members.

The program of the New Orleans meeting is well under way and promises to be an unusually good one. Several papers on the Army Veterinary Service are promised and a number of papers on practical subjects that will be of interest to every practicing veterinarian. Some scientific papers are also provided for on transmissible diseases that will give the very latest definite data on diseases that every veterinarian should have.

Owing to illness, the Secretary has only been able to attend the meetings of the Illinois Veterinary Medical Association, a report of which is published in this issue of the Journal, and the Missouri Valley Veterinary Association meeting at Omaha. At both meetings the advantages of the A. V. M. A. were presented and a number of new applications were received. At the present time there are about five hundred applications for membership in the Secretary's hands. Every member of the Association should make an effort to get at least one new member. This can be done if each individual will make an effort, and it would mean a tremendous advance in the progress of the Association, and of the profession generally.

It is reported that good progress is being made for the permanent veterinary organization of the Army and also on the bill for increasing the pay of the veterinarians in the service of the

Bureau of Animal Industry. There are a number of problems of a business nature to come before the Association at the next meeting and every member should make plans now to attend the meeting and bring his wife or sweetheart. There will be "something doing" all the time.

N. S. Mayo.

LOOKING SOUTHWARD.

For the past twenty-six years the American Veterinary Medical Association has had its regular annual meeting either in August or September. In 1893 it convened in Chicago, October 17-20th, just twenty-six years and one month to a day from the time it will meet in New Orleans November 17-21st. When the members have been trained for a quarter of a century to look forward to the meeting in August or September, the period seems unusually long when it is deferred until November.

In 1914 we began to have visions of New Orleans, but our hopes were suddenly shattered with an outbreak of foot and mouth disease which retained the profession at home, and it was looked upon as a duty, during perilous times when the patience of all men was severely tried. Many regretted they could not visit the south at that time, but were unanimous in their opinion that the right policy was followed.

Entrance to State University, Baton Rouge, La.

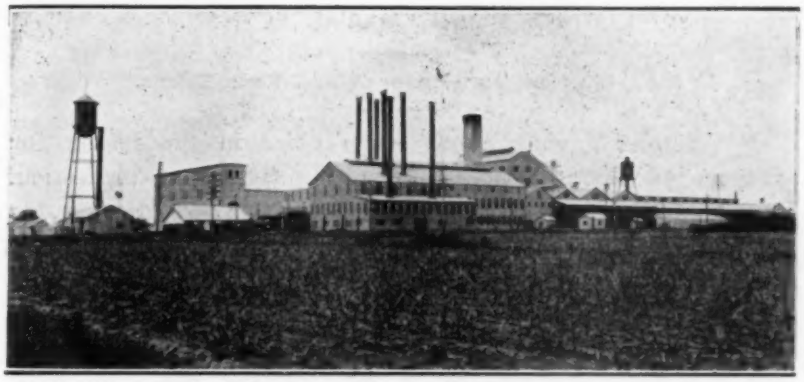
This year we are again looking southward, and by the time you become the reader of this page, only a few more than sixty days will be between you and November 17th. Much could happen in that time to destroy our ambitions to attend, but we are not anticipating such a calamity. We are optimistic, and sincerely believe this will be a striking event in the history of our Association. It should be a record breaker in attendance, definite scientific information derived, recreation, social relationship, and a better understanding of the responsibilities resting upon the veterinary medical profession. Briefly, the future of the profession largely depends upon close observation and upon the character of the membership. We must stand enthusiastically united for a common cause, and the younger generation of veterinarians must keep vividly in mind the splendid lessons taught them by their seniors, so that the spirit may be perpetuated.

Undoubtedly, many new members will be present, and for the first time, will be participants in a great scientific organization. Their first impressions will be lasting ones, and, to a certain extent, a standard for future meetings will be established. We do not want a limit placed on ambition and talent, and in order to avoid this possible handicap, let each older member encourage everyone to take a part. We sincerely hope the spirit of enthusiasm and freedom will be injected into all. Joy should travel with us from our homes to New Orleans and return without a single interruption. The journey southward should be one of anticipation and the homeward one of complete satisfaction. The local committee is doing everything possible toward paving the way for success. Little details are being looked after, and as time is our greatest asset, we are taking it by the forelock and arranging things well in advance.

The convention this fall should be a turning point toward a greater Association, as the membership is rapidly increasing and our duties expanding. A number of vital subjects should be cautiously and logically discussed, and a member who listens carefully, and finally expresses his ideas outside, has, perhaps, withheld a valuable suggestion. "Timidity is responsible for the loss of a great deal of talent". Let us keep in mind the time, place, and opportunity to advance ideas, in a constructive spirit, is in official session, so all can appreciate the status quo.

Only once a year do we have the privilege of renewing old acquaintanceships, making new friends with new members, and

with those who attend, now and then. Some who were present a year ago have crossed the Great Divide, and who knows how many will be permitted to attend another meeting? It is a great reunion and should, in a measure, celebrate the reunion of nations which is a crisis in the course of human events. Names and places have been immortalized, and now it remains with us to make our hopes materialize, and our ambitions to reach the peak of success.



RESERVE SUGAR REFINERY, LOUISIANA
Showing young growing sugar cane in foreground.

As we turn our eyes toward the land of the golden sunset, we have before us a panorama of views which can only be comprehended through personal observation. Many will journey through the industrial fields of the nation over and between the majestic mountain ranges, and finally across the plantations white with cotton, and sweet with sugar cane, toward sea-level where the proud, stately oaks stand so silent, delicately draped with long tresses of gray Spanish moss. They will be approaching New Orleans, the Crescent City, with its warm gentle atmosphere in direct contrast to the great blanket and drifts of white snow.

When you emerge from the depot and journey up Canal street, you will see great banners fluttering on the broadsides of the Grunewald Hotel, "Headquarters American Veterinary Medical Association, November 17-21st". The imagination of this picture should be an inspiration to all and enthuse us to such an extent that there will remain only one thing to do, and that is to commence right now to be ready in November for a trip southward. E. I. S.

OTHER ASSOCIATIONS.

ASSOCIATION OF STATE AND PROVINCIAL VETERINARY COLLEGES.

REPORT ON THE SUBJECT OF TRANSMISSIBLE DISEASES IN THE VETERINARY CURRICULUM.

By L. VAN ES, Agricultural College, North Dakota.

By degrees a change has taken place in the reason for existence of a considerable part of the veterinary profession. Influences which require no special mention are driving the veterinarian more and more into the open country, where a greater variety of problems are requiring of him more skill and a more thorough training than was needed in the days when "horse-doctoring" was his almost sole occupation. The country's increasing population, its crowding into large cities and industrial centers has brought changes in the social-economic aspects of animal husbandry, and those in turn have imposed new functions upon the veterinary profession, which also require that consideration must be given to the more or less urgent need of reorientation of our curricula.

Curricula have, indeed, engaged the attention of those interested in veterinary progress for some time, but this attention has largely centered about length of courses, time devoted to subjects and questions of uniformity. No doubt, those considerations are largely justified by actual conditions, but on the whole they have been permitted to overshadow the far more important features pertaining to teaching technique and methods, which after all constitute the very essence of professional training.

That those features are uppermost in the minds of certain progressive teachers is encouraging enough, but it should receive more than a mere private interest.

The attempt to standardize our curricula, to create a more or less iron-bound uniformity of courses, may be praiseworthy enough, but when carried beyond a certain point it is apt to

become obstructive to progress. It may be well to define for certain subjects the proper place in the curriculum or to determine how many hours should be devoted to them, but the autonomous conduct of an institution, as long as it admits only students with sufficient preparation, should not be subjected too much to the ministrations of overlords whose educational ideals, perhaps, as yet permit no distinction between schools conducted in the interests of their promoters and those forming an integral part of public higher education.

As long as we have no uniformity in human ideals, in intellectual achievements and above all in the capacity of a teaching personnel, we can have no illusions about a rigid uniformity of schools. However much this may be desired by some, schools will continue to excel in certain subjects and will fail to achieve the best in others.

Those natural and unavoidable limitations should by no means prevent us from establishing certain ideals and from striving for their realization, and with this in mind a given part of a curriculum may well become the subject of our serious consideration and inquiry.

No doubt the subject of communicable diseases now occupies a prominent place among those which will enable the future veterinarian to acquit himself in the fullest measure of the task which is essentially his. With the changes which this task has undergone as already mentioned, a consideration of this subject is a timely one and more in particular because of the abundance of evidence, that the importance of thorough training and instruction dealing with the transmissible diseases of animals is not always recognized.

When we witness the enormous sale of so-called immunizing agents of questionable value, how those often pertain to diseases of unknown etiology, how veterinarians are permitting themselves to degenerate into sale agents for biologicals and how our association meetings are rapidly becoming more market places for those products, where vaccine and serum hucksters all but monopolize the programs, we cannot escape the conclusion that a large number of veterinarians are not well fortified by a well grounded knowledge of the conception of infection, of the diseases produced in this manner or the immunity principles involved. Yet the very things mentioned are in reality but manifestations of the great interest taken

by veterinarians in general in this particular class of diseases. This interest, being apparently fairly established, leaves us with the problem, as to the best methods of rendering it fruitful and directing it in logical and rational channels.

The solution of this problem is to a large extent the function of our veterinary schools, which cannot remain blind to the fact that this constitutes one of their chief claims to public confidence and support. For this reason alone a discussion of the ways and means by which this may be best accomplished appears to be warranted, especially so if this may lead to the establishment and the defining of certain ideals pertaining to this particular field of veterinary medicine.

Such a consideration must first of all include such details as the subjects placed in the curriculum and the preparation which the student should receive before he is asked to undertake its mastery. In dealing with such items as curriculum and students, we assume beforehand that the former extends ever a period of nine months for four consecutive years, and that the latter enjoys at least that degree of educational maturity, which we have a right to expect from the completion of a first class high school. We may further state, that in this discussion, we have in mind a curriculum based as much as possible on the logical sequence of the subjects taught, and in which the first two years are nearly exclusively devoted to the essentially non-clinical subjects, while the last two years are given to the purely clinical branches and those which are more closely connected with it.

The place which the subject of transmissible diseases should occupy in a curriculum is above all determined by the number and character of the subjects which may be deemed essential as preparation. While avoiding details, we deem it necessary to define the ones which more especially constitute the foundation upon which the presentation of the infectious diseases must be based. Without failing to recognize that nearly all subjects of a veterinary curriculum are related to one another, we mention here: bacteriology, veterinary zoölogy and entomology, general pathology, methods of diagnosis and immunology.

Although bacteriology belongs to the non-clinical subjects, it will not be possible to present it early in the course, where chemistry, anatomic subjects and physiology must be given the right of way. It can, however, be offered during the latter

part of the second year and extended into the early part of the third year. As presented to students of that status, we believe that emphasis should be given first of all to the classification of micro-organisms, their natural history, physiology, morphology and above all the technique and methods by which they are studied. We deem this much more imperative to good final results than a drilling at that time in the peculiarities of given species of pathogenic organisms, although in the part of bacteriology taught during the third year this could perhaps be undertaken. Whether or not the bacteriology taught should include a consideration of the protozoa is a question to be decided by the respective teachers of bacteriology and veterinary zoölogy.

The latter subject, dealing with animal parasites and insect parasites and insect pests, must also be regarded as basic to the teaching of the communicable diseases inasmuch as the latter include a large group which are caused by those factors, and, in the consideration of live stock sanitary methods, it is not always possible to make a distinction between diseases due to macro- and those due to micro-parasites. The teaching of veterinary zoölogy may also be undertaken during the end of the second and the beginning of the third year. While the relation of animal parasites to disease should be revealed to the students, it will not be necessary to give special emphasis to this feature, but classification, life history and morphology must be thoroughly treated, at least of the common and the more representative species.

General hygiene, also a subject fundamental to the later teaching of the transmissible diseases, may be taught at a time when the student has completed his work in physiology and chemistry. In presentation of this subject, the actual prevention of communicable diseases cannot be ignored altogether, but the major effort should be devoted to the relation of extraneous influences and surrounding media to animal well-being, while under the heading of hygiene may also be considered such features as statistics, sanitary laws, the exercise of the police power, etc. A student should be able to successfully grasp this subject during the latter part of the second year. During that time he may be permitted to visualize some of the problems connected with diseases, which will confront him in the third and fourth years. The subject of hygiene can be so presented that it constitutes a kind of connecting link between the strictly non-

clinical and the more purely clinical branches of the curriculum.

Of more importance, as such, however, is the instruction in general pathology and pathologic anatomy, which in the writer's opinion should be the *pièce de résistance* of the third year, even if at that time the student must be introduced to the surgical subjects and to special pathology and therapy. For the latter subjects general pathology and pathologic anatomy always is an indispensable ground work and it is so no less for the successful teaching of the communicable diseases. The teaching pathologist has the task of revealing to his students the operation of disease causes and its results on the body structures and functions. This instruction should not be confined to the static result of pathologic changes, but must also embrace the dynamics of disease if the student is to develop the power of reasoning and analysis upon which his future success is bound to depend. In no part of the curriculum is a thorough understanding between teachers more essential than between those in charge of general pathology, the surgical branches and special pathology and therapy. Their efforts must be carefully timed and in harmony, because of necessity their work somewhat overlaps, while one is dependent upon the successful teaching of the other.: This coordination is likewise of importance for the fruitful consideration of the communicable diseases.

Methods of diagnosis and clinical exploration must also be given a place in the curriculum of the third year and is as essential as a preparation and complement in clinical teaching as it is to the presentation of the transmissible diseases.

The latter should also be preceded by some ground work in immunology, which we conceive to be an inquiry into the various reactions set into motion when a foreign protoplasm or its derivatives invades the animal organism. The immunity mechanism should be thoroughly explained, the artificial methods based on it must be made clear to the student while the application of immunity reactions in the diagnosis and the investigation of disease requires a most thorough treatment.

From what was said above, it will be apparent that the subject of transmissible disease should form part of those taught during the fourth year of the curriculum, and that furthermore it should be given the status of separate discipline.

Such a status, however, should not prevent its perfect correlation to the other clinical branches, in fact it would not be

entirely incompatible to good results if the subject were handled by members of the clinical teaching staff. Nor, does it mean that the teachers of special pathology or surgery must keep aloof from any disease of bacterial or gross parasitic origin, but rather that a certain series of diseases must be set aside for a more special and detached consideration, either because of their general economic importance, their relation to public health, the special methods of their control or peculiar problems met with in their presentation to students.

Tentatively we may conclude in this series such diseases as tuberculosis, glanders, anthrax, black-leg, abortion disease, hog-cholera, the hemorrhagic septicemia group, coli bacillosis, necro-bacillosis, foot and mouth disease, pleuropneumonia, rinder-pest, poultry scourges, rabies, coccidioses, piroplasmosis, trypanosomiases, mycoses, helminthiases, scabies, etc.

The selection of the series must be carefully made with the full participation of all teachers engaged in the instruction of clinical subjects in order to avoid unnecessary duplication. After the series has been so chosen, its systematic treatment becomes the function of the teacher or the department set aside for the purpose. This treatment must be thorough-going, and should embrace considerations relating to etiology, clinical features, pathologic anatomy, epidemiology, immunology and treat ment as well as prophylaxis.

In the presentation of the subject use must be made of didactic and laboratory methods as well as of clinical demonstrations and sufficient time must be made available for the purpose. Opinions will probably differ as to what constitutes a sufficient time allowance to be devoted to the teaching of this subject, but it is probable that with three one-hour recitation periods and three two-hour laboratory and clinic periods per week throughout the entire senior year justice could be done to the subject.

The teaching technique will vary with the ideas of the individual instructors and no advantage can be obtained by establishing hard and fast rules for their guidance, but even without attempting this it may be profitable to give this feature some general consideration.

The qualifications and the scientific and professional equipment of the teaching personnel will to a greater or less extent determine the manner in which the subject of transmissible disease is presented to an audience of students. In this subject

above all others a large experience obtained in the field, combined with scholarly attainments and a contagious enthusiasm for his work, would tend to make an ideal teacher. He would be able to present his subject without leaning on a text; he would largely furnish his own even if the task of the true teacher consists to a great extent in interpreting to his students the recorded work and observations of others. Such a teacher need not devote much time to hearing recitations by students in his lecture room, but only requires the casual discussions in laboratory and clinic in order to keep himself informed on his student's grasp and progress.

Unfortunately this type of veterinary teacher is rare in our country. Often there is a lack of scholarship in those who have a large and rich experience, while in the case of those who do combine those valuable qualifications, it is very uncommon that schools succeed in obtaining their services. For such men our schools have but a feeble attraction and even if an institution is capable of developing such a teacher, it is very apt to promote him into some executive position, in which his professional talents become lost in a tangle of administrative drudgery.

Thus necessity often forces institutions to employ as teachers young men, who however scholarly inclined, however enthusiastic for their work, are delinquent in that degree of practical experience which would qualify them as authority. When such men finally reach that stage of development the institutions usually lose them because for such men the current of attraction is commonly away from educational work.

Teachers of this type will frequently be dependent on an authoritive text and the method of class-room quizzing and recitations. No doubt this has its advantages also. Students so trained are perhaps better prepared to face a state examining board, which, as a rule, is more pleased with candidates whose heads are storehouses of facts than with those whose brains have acquired the rather uncommon but precious art of thinking and reasoning.

If teaching is to be worth while at all it must not only aim at the acquisition of more knowledge but at the development of the power of its logical interpretation as well. Facts can always be gotten from texts but in the formation of habits of thought

we will have to rely on the teaching staff unless the student is endowed by nature with an unusual mental equipment.

In the didactic presentation of the communicable diseases a general consideration of common features should precede the discussion of the special members of the group and the latter's placing in the teaching program should be more from the viewpoint of what may become available in clinic or laboratory than of their natural classification. In this relation two types of disease may be recognized, one including those diseases which are not likely to be met with in either clinic or autopsy room, and the other those with which the students can be brought in actual contact. In the planning of the teaching program the question confronts us whether or not the best results can be secured by a more or less systematic class-room presentation, using clinic and laboratory as secondary factors, or by building the course around the available clinical material. The latter could perhaps be accomplished with success in institutions which have at their disposal an enormous amount of material representing a great variety. As a rule our schools have no such a volume available and are compelled to get the best out of a more modest amount and hence they will be obliged to compensate for this deficiency by an emphasis on didactic teaching. The latter can and must be reinforced by laboratory work with and demonstrations of preserved material, and special pains must be taken to gather this in abundance.

Inasmuch as it is ordinarily impossible to time the presentation in clinic and autoposy room with that of the lecture room, we would be inclined to devote didactic teaching first to those diseases which are not apt to be met with clinically, and to use the available laboratory and clinic periods to a study of the preserved materials pertaining to them.

The living cases of the other type of diseases must even without a preceding class-room discussion be carefully studied in the clinic whenever there is opportunity. On such occasions the more salient features of the disease can be briefly explained, but the phenomena actually seen must be carefully recorded by the students by the direction and under the supervision of the teacher, and those records must again be consulted and discussed when the given disease is being considered in the class-room.

We deem this recording of facts actually seen in the clinic and autopsy room as of the greatest importance from an instructional viewpoint. Such records should be made on special forms as directed by the teacher; they must be made to form part of the students' permanent equipment as well as of that of the department. Not only should the student be obliged to preserve the records of the cases he has actually seen and studied, but those made by previous classes or other sections can also be drawn upon to complete the collection.

Such records in sufficient number will not only be of value in class-room discussions but will be much more important to the future practitioner than the time honored "notes" which he is often compelled to prepare with great effort and which in the end are far inferior to the printed text on his shelves.

The two-hour periods designated as clinic and laboratory should be devoted to clinical demonstrations, autopsies or laboratory exercises. In an ideal institution the department of transmissible diseases should have at its disposal the physical equipment, which would permit the teaching staff to either bring before a class living material for clinical study or to conduct autopsies or to take the students in the laboratory for bacteriologic, immunologic or histo-pathologic exercises. With the growing importance of this type of teaching we believe it justifiable to insist at this time that such equipment be provided. As long as our schools are not so equipped, it will be necessary to so correlate the time set aside for this type of teaching that laboratory facilities also used by other departments can be utilized.

This arrangement may have the appearance of a certain looseness or lack of system. It will furthermore impose some extra burdens upon the teaching staff, but is probably the only solution of the problem of getting the most out of time and material.

Clinical and autopsy material must be utilized to the greatest extent possible. A case of a given disease can both be presented by a teacher of surgery or special pathology as well as by the one dealing with transmissible diseases. The former will emphasize the more clinical features, while the latter will give special weight to its communicable character and its importance to exposed live stock. In the same manner will the pathologist share his material with the teacher of communicable diseases and vice versa. This may give rise to some duplication but to a useful one, and even if in some cases there may be conflict

in the expressed opinions of teachers, this can only result in stimulating the student to analysis, to reasoning and to independence of thought.

After all, like in other subjects, which have their place in a veterinary curriculum, the presentation of the communicable diseases must place the students in the possession of certain facts or theories, but at the same time they must be led to develop the habit of clear thinking and independent reasoning when confronted with a problem. A school which merely turns out living encyclopediæ only fulfills half of its mission. The other half, the training of mind, is what counts for fully as much.

In the light of the preceding discussion, the following conclusions are offered:

1. The present day functions of veterinarians render it advisable that the subject of communicable diseases be given a special place in the curriculum of veterinary schools.

2. That it is during the senior year, when this subject can be most successfully taught.

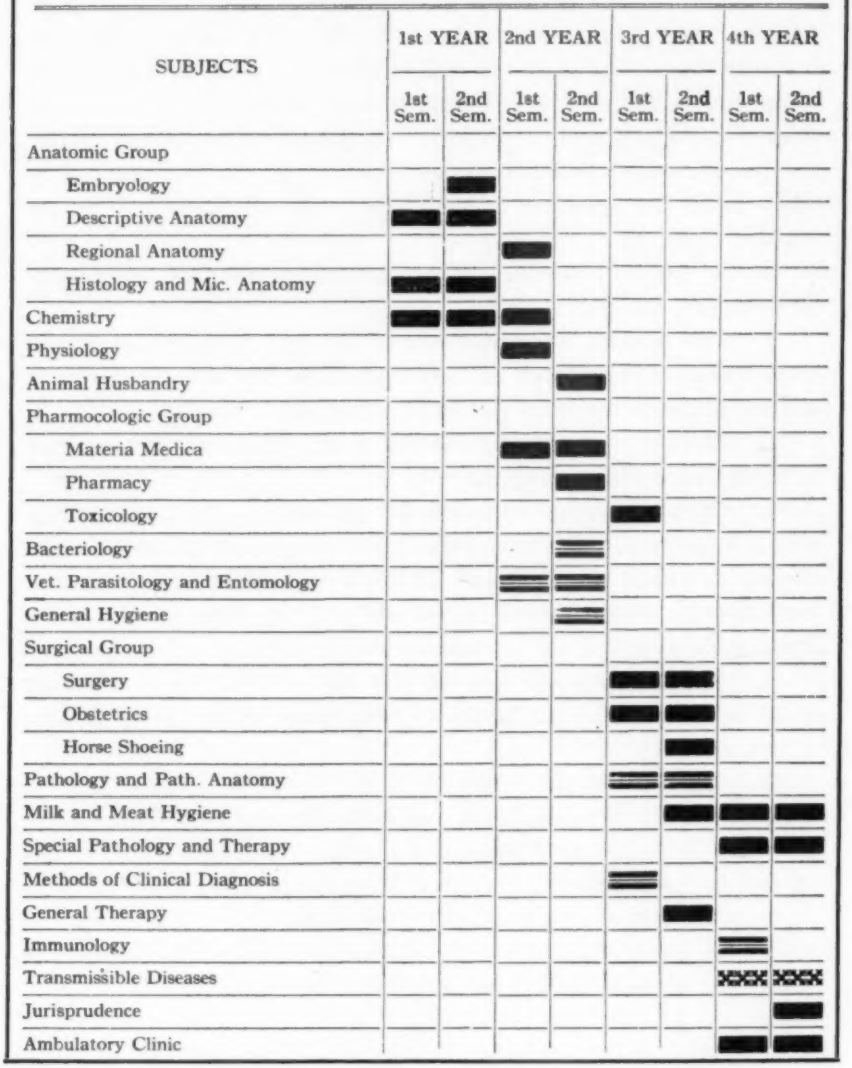
3. That the subjects bacteriology, veterinary parasitology and entomology, general hygiene, pathology and pathologic anatomy, methods of diagnosis and clinical exploration, general immunology constitute the immediate pre-requisites for the fruitful presentation of the transmissible diseases.

4. In the presentation of the subject, didactic teaching must be combined with laboratory exercises and clinical demonstrations.

5. Institutions are warranted to establish special departments devoted to this subject and such departments should have at their disposal the equipment necessary for the type of instruction mentioned in the preceding paragraph.

6. Not less than three lecture periods of one hour each and three laboratory and clinic periods per week throughout the entire senior year should be devoted to this subject.

PLACE AND RELATION TO OTHER SUBJECTS OF THE DISCIPLINE OF TRANSMISSIBLE DISEASES IN A VETERINARY CURRICULUM



LOUISIANA VETERINARY MEDICAL ASSOCIATION COMMITTEE MEETING.

On Saturday, July 26th, in the Association of Commerce, New Orleans, La., the Committee on Arrangements, the one on Program, Badges and Entertainments, and the sub-committee on Finance, appointed to cooperate with the A. V. M. A., held an interesting meeting and reported much progress along the lines of their respective duties.

The financial situation appeared to be well in hand and the outlook for further funds was bright. Dr. Cambon, Chairman sub-committee on Finance, reported that he had received donations from several Southern State Associations.

The question of badges was settled and those who attend the A. V. M. A. this fall may be proud to wear such an exquisite work of art. A special badge will be designed for the ladies, and will be one which will be useful long after the meeting is over.

The local program will be greatly enlarged and made extremely attractive so that each member will cherish it as a souvenir of the occasion. Considerable advertising will be secured for the program, which will make it unique in more ways than one.

All the Committees are giving important matters early attention so that every detail may be perfected before November 17th, and in the meantime, several other meetings will be held so as to take care of any new features which may arise.

Those in attendance were:

Dr. F. J. Cambon, New Orleans, La.

Dr. Frank Collins, Monroe, La.

Dr. F. J. Douglass, New Orleans, La., Chairman, Committee on Programs, Badges, and Entertainment.

Dr. E. P. Flower, Baton Rouge, La.

Dr. F. S. Hewitt, Hammond, La.

Mr. Thomas J. Hill, Association of Commerce, New Orleans, Louisiana.

Dr. D. H. Maclean, New Orleans, La.

Dr. Hamlet Moore, New Orleans, La., in Charge of Programs.

Dr. E. I. Smith, Baton Rouge, La., Chairman, Committee on Arrangements.

Dr. R. W. Tuck, New Orleans, La.

Dr. A. W. Vornheder, New Orleans, La.

The meeting was a splendid success, and each time we are always fortunate in having with us Mr. Thomas J. Hill, of New Orleans Association of Commerce, who gives us the benefit of his experience in handling other large conventions, particularly the entertainment feature and the hotel negotiations.

The conference emphasized the necessity of those contemplating attendance to make early hotel reservations. From present indications many are doing so and it is believved such a procedure will insure more comfort and satisfaction to all concerned.

The following letter has been sent by Chairman of the Committee on Arrangements to all the New Orleans hotels.

"On account of the meeting of the American Veterinary Medical Association, which will be held in New Orleans, November 17th to 21st, inclusive, all the New Orleans hotels have been given considerable amount of advertising through the pages of the Journal of the Association, which reaches nearly 4,500 subscribers, both at home and abroad. We expect about 1,500 or 2,000 of these members to attend the convention this fall, and have urged them to secure their hotel reservations months in advance of the meeting.

This will be a large and important convention and will mean much to New Orleans and the entire South. Therefore, it would be very gratifying indeed if you could give these requests very careful consideration by assuring those who write you that they will be taken care of immediately upon their arrival.

Mr. Thomas J. Hill of the Association of Commerce informs me that he believes the hotels will exert the limit of effort to accomodate all the delegates and their families who arrive. Distinguished speakers, such as Governor Ruffin G. Pleasant, Mayor Martin Behrman and Doctor Oscar Dowling, will be on the program of the convention, together with other notables from the veterinary profession in the United States and Canada.

Feeling sure of your heartiest cooperation, I beg to remain."

Acknowledgments have been received which are very gratifying, as they go on record with a promise to afford each member of the A. V. M. A. every attention and kind consideration. In arranging two other conventions in New Orleans for the B. A.

I. employes, the writer has found that the hotels lived up to their obligations. E. I. S., *Sec.-Treas.,*
Chairman, Committee on Arrangements.

WEST VIRGINIA VETERINARY MEDICAL ASSOCIATION.

The West Virginia Veterinary Medical Association met at the Hotel Kanawha, Charleston, W. Va., on July 1st, this being the annual meeting.

The following officers were elected for the ensuing year:

President, Geo. W. Kinsey, Wheeling.
Vice-President, I. H. Horton, Moorefield.
Secretary-Treasurer, S. E. Hershey, Charleston.

A very instructive paper was read by Dr. Neff, Federal representative co-operating in Tuberculosis Eradication.

The following members answered roll call:

W. E. Langford, Keyser.
I. H. Horton, Moorefield.
L. N. Life, Weston.
W. D. R. Nickoll, Lewisburg.
F. C. Nickoll, Cass.
J. A. McMasters, Ravenswood.
R. Morgan, Winfield.
E. M. Spangler and J. C. Callender, Parkersburg.
L. N. Reefer, Wheeling.
W. B. Alfred, Weston.
C. O. Davis, Richwood.
C. C. Hudkins, Charleston.
C. T. Higgenbotham, Charleston.

Drs. Neff and Armstrong, Charleston, W. Va. were elected honorary members.

S. E. Hershey, *Secretary.*

ILLINOIS STATE VETERINARY ASSOCIATION.

The summer meeting of this association was held in the Auditorium of the State University at Urbana on July 7 and 8. Over three hundred veterinarians were in attendance and a very interesting meeting was had.

Prof. Mumford, Dean of the Department of Animal Husbandry of the University, gave an address on "What the Livestock Breeder Expects of the Veterinarian." This subject was also discussed by D. O. Thompson of the State Agricultural Society. Dr. J. C. Stokes gave a summary of the results of a large number of autopsies at shipping centers and called attention to the large loss of livestock in shipping, much of which could be prevented. Approximately sixty per cent of the losses were the results of diseases of the respiratory organs. Dr. Stokes urged veterinary practitioners to advise their clients who shipped stock to avoid crowding, particularly in hot weather, to see that the cars were clean, disinfected and properly bedded and to avoid shipping weak, ailing animals or those advanced in pregnancy.

Dr. A. T. Kinsley spoke upon the "Differential Diagnosis of Some Transmissible Diseases of Swine." He deprecated the use of the term "Mixed Infection" diseases and stated that in his opinion this disease was hemorrhagic septicemia of swine. This subject provoked a lively discussion by Drs. Schwarze, Cahiel, Craig, Glover, Roberts and others.

Dr. H. B. Raffensperger of the Bureau of Animal Industry read an unusually interesting paper giving a summary of the recent discoveries with reference to the life history of the common round worm of swine. He also exhibited a number of unthrifty pigs. These pigs were sacrificed and the larval worms in the lungs were demonstrated to those present by miscroscopic examination.

Dr. W. W. Dimock of Lexington, Kentucky, read an interesting paper on "Animal Parasites," treating the subject broadly in its relation to Animal Industry and the general plan for their control.

Dr. H. Preston Hoskins of Detroit read a paper on "Hemorrhagic Septicemia" of cattle and called attention to the widespread distribution of the bipolar organisms. Dr. E. T. Baker of Moscow, Idaho, the recognized authority on sheep diseases, discussed this important subject in his entertaining way. Dr. W. G. Keehn read a paper on preventive medicine, dealing largely with the use of biologic preparations and sanitation. Dr. N. S. Mayo spoke on his veterinary experiences in the Tropics. Dr. E. L. Quitman discussed the "Treatment of Equine Influenza and its Complications" and State Veterinarian A. T. Peters spoke on "The Importance of Uniform Methods in Test-

ing for Inter-State Shipments." Lieut. F. Reynolds, V. C. U. S. A., and Dr. H. W. Burkland of Atlanta, Georgia, discussed the "Biological Findings and Chemical Aspects and Treatment of a Fatal Disease of Horses and Mules at the Atlanta (Georgia) Stockyards." Dr. S. L. Stewart gave an illustrated address on "Pecularities of Anatomy and Autopsies of Sheep." Dean Davenport of the Department of Agriculture of the University gave an address on "The University's Part in Veterinary Education." The Faculty School of Music entertained the Association with a fine selection of vocal and instrumental music. Special provision was made for the entertainment of the ladies that included a visit to the Women's Department of the University and to the U. S. Aviation field at Rantoul.

N. S. M.

WESTERN NEW YORK VETERINARY MEDICAL ASSOCIATION.

The fifth annual meeting of the Western New York Veterinary Medical Association was held June 27th, Buffalo, N. Y.

The meeting was called to order at 10 a. m., and the forenoon was devoted to clinics which were held at the hospital of the Humane Society and consisted of operations of Neurectomy, Removal of Tumor, Treating of Capped Hock, etc. A number of cases were presented for diagnosis and observation.

The business session was opened at 3 p. m. with President J. L. Wilder presiding, 28 members responded to roll call, routine business was then disposed of, Reports of Officers was next given and showed the Association to be in good, flourishing condition.

Officers were elected for the ensuing year as follows:

Pres., Dr. W. E. Frink, Batavia, N. Y. V.-Pres., Dr. F. E. McClelland, Buffalo, N. Y. Sec.-Treas., Dr. F. F. Fehr, Buffalo, N. Y., and the following directors:

Rr. Anderson Crowforth, Lockport, N. Y. Director for 3 years.

Dr. Edward Rafter, Hamburg, N. Y. Director for 3 years.

Dr. E. L. Volgenau, Buffalo, N. Y. Director for 2 years.

Dr. Geo. R. Chase, Attica, N. Y. Director for 2 years.

Dr. Nelson P. Hinkley, Buffalo, N. Y. Director for 1 year.
Dr. Joseph L. Wilder, Akron, N. Y. Director for 1 year.

Four new members were added to our number making a total of 50 members.

At 6:30 the meeting adjourned for dinner, in which the ladies joined after spending the afternoon on a boat ride on Lake Erie.

After dinner the ladies were escorted to the theatre and the meeting reconvened for the addresses and papers.

Dr. Anderson Crowforth gave a very interesting talk on "How to collect the money". Dr. Crowforth showed the different ways and methods he used to extract the "coin" from the slow pay and dead beats.

Dr. Nelson P. Hinkley then gave a very interesting paper on Tetanus and Tetanus Antitoxin, showing how numerous tetanus cases had been treated with tetanus antitoxin successfully in all stages of the disease.

Dr. V. W. Rood read a paper on "Forage Poisoning" which aroused no small amount of discussion among the members.

Dr. F. F. Koenig gave a very interesting and instructive talk on "Physical Diagnosis of Cattle". The Doctor being well versed in this subject gave a very concise method for making a proper physical examination and showed where in many cases it was more accute or valuable than a biologic test.

Meeting then adjourned to the second week in December, 1919.

F. F. FEHR, *Secy.*

CONVENTION CALL.

NATIONAL ASSOCIATION OF BUREAU OF ANIMAL INDUSTRY VETERINARIANS.

Office of The Secretary,
185 Northwestern Ave., Milwaukee, Wisconsin.

August 12, 1919.

To the Officers and Members of all State, Divisional and District Associations, N. A. of B. of A. I. V.

Greetings:

This office has been directed by National President St. Clair, to announce that the Second Annual Convention of the N. A. of B. of A. I. V. will be held in New Orleans, La., beginning at 10:00 A. M., Monday, November 17, 1919.

The number of members for whom per capita tax has been paid for the fiscal year ending August 31, 1919, shall determine the number of votes to which a Division is entitled.

Enclosed herewith are credential cards for delegates and proxies. For each delegate elected, the President and Secretary of the Division should fill out a pink and white credential card. The white card should be mailed to this office and the pink card given to the delegate.

If the Division decides to be represented by a delegate of another Division, the blue and green cards should be filled in; the green card being sent to this office and the blue card mailed to the proxy for the Division.

The cards, after being properly signed, should be mailed to this office with as little delay as possible. This is important, not only for the purpose of facilitating preparations for the Second Annual Convention, but it is also very important to the delegates themselves.

If a Division is entitled to more than one delegate and sends only one delegate, such delegate is entitled to as many votes in the Convention as the Division or Divisions that he represents may be entitled to, and but one set of credentials need be made out for such delegate.

Each delegate should receive from the officers of his Division a pink credential card, and should deliver same in person to the National Secretary at Convention headquarters previous to the opening of the Convention; and for each proxy that may be carried, a blue credential card should be delivered to the proxy who shall file same with the National Secretary at Convention headquarters previous to the opening of the Convention. In this connection your attention is respectfully directed to the following extracts from our National Constitution adopted at the Philadelphia Convention:

Article IV, Section 1. The annual convention shall be held at the same time and at the place of the regular annual meetings of the American Veterinary Medical Association.

Article V, Section 1. The representation at the National Convention shall consist of duly elected delegates, who shall be entitled to cast one vote for every ten members, and one additional vote for a fraction thereof over five members in good standing of the State or District represented. Any State or

District, or any combination of States or Districts within a zone may send to the National Convention one or more delegates.

Article V, Section 2. The representation of any Association at the National Convention shall be based on the average amount of per capita tax paid by that Association during the fiscal year.

Article IX, Section 1. All National Officers not delegates shall be allowed the right to participate in all debates without the privilege of voting and shall not be permitted to cast a proxy vote.

Delegates should assure themselves as to the standing of their own Division and of any Divisions they are expected to represent by proxy. If you are not sure on this point, by sending a letter to this office you can procure the desired information.

Members who are in arrears cannot represent any Division in the Convention. Divisions should see that the credentials are properly filled in with ink, using the proper cards for the purpose, and mailing cards to this office as early as possible. It will be difficult to return the cards for correction and it is therefore urgent that the instructions be followed, thereby preventing delay and confusion to the delegates and to the Committee on Credentials.

No National Officer can cast a proxy vote, but he can cast the vote or votes of a Division if he be the regularly elected delegate of said Division.

The Grunewald Hotel, University Place, off Canal Street, will be our Convention headquarters. At this hotel we will have Convention Hall and executive offices free, and all officers and delegates desiring rooms at that hotel should make reservations at once as Secretary-Treasurer Rafnel of our Louisiana Division advises that it will be impossible to get accomodations at the Grunewald if you wait much longer. The rates on rooms at the Grunewald Hotel are as follows:

Single room without bath for one person, per day, $1.50.
Single room without bath for two persons, per day, $2.50 and up.
Single room with bath for one person, per day, $3.00.
Single room with bath for two persons, per day, $4.00 and up.
Double room without bath for one person, per day, $2.00.
Double room without bath for two persons, per day, $3.00 and up.
Double room with bath for one person, per day, $4.00.
Double room with bath for two persons, per day, $5.00 and up.

All correspondence regarding reservations of rooms at Convention headquarters should be addressed direct to the Manager of the Grunewald Hotel. The locations of other hotels in New Orleans and their rates were published in the Journal of the A. V. M. A., July, 1919, pages 465-466.

All Divisions are urged to be represented at this convention by regular delegates. Invitations will be extended to members of the Louisiana Delegation in Congress, the Honorable Secretary of Agriculture and other Department Officials, his Excellency, the Governor of Louisiana, the Mayor of New Orleans and other men prominent in public life, to attend this Convention. Many of our friends who are leaders in the U. S. Live Stock Sanitary Association will be present. Our Convention will be in conjunction with the 56th Annual Session of the American Veterinary Medical Association. It is therefore important that we have the largest possible number of delegates in attendance.

Division Secretaries should forward to this office, as early as possible, the names of regular and alternate delegates. All correspondence regarding credential cards, and other Convention matters should be addressed to this office.

We have arranged with the A. V. M. A. to have one session of the Section on Sanitary Science and Police at their New Orleans Convention devoted to papers and topics of special interest to B. A. I. veterinarians. It is believed that this arrangement will stimulate greater interest in the B. A. I. affairs with the profession in general and be of far reaching effect in our campaign of publicity.

On to New Orleans!

Fraternally yours,

S. J. WALKLEY, *Secretary.*

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The twenty-ninth annual meeting of the New York State Veterinary Medical Society was held at Brooklyn, N. Y., at the Imperial Restaurant, on July 23-24 and 25th. President G. A. Knapp presided. Mr. Fennelly of Borough Hall gave the address of welcome. Major D. H. Udall responded on behalf of the Society. The lady visitors were present during this part of the business session but left early to enjoy the many things

provided for them by the Local Committee on Arrangements. The Board of Censors presented the names of thirty-two candidates for membership. All of these applicants were elected without any dissension. This number of candidates marks the record for the Society up to this time. It is planned to make the list of applicants larger during the next year, and to make 1919-20 the banner year. The Board of Censors also presented the names of Dr. T. E. Munce of Harrisburg, Pa., and of Dr. Benj. A. Pierce of Springfield, Mass., for honorary membership. There was a unanimous vote for these two men, both of whom were present and participated in the discussion of papers.

In the afternoon session of the first day Dr. R. H. Spaulding read a paper on "Leukemia and Pseudo-Leukemia in Dogs". Dr. A. Eichhorn read a paper on the "Present Status of Hog Cholera". Dr. C. I. Corbin gave the last paper of this session. His subject was "Clean Milk." For the morning of the second day Dr. C. M. Carpenter discussed "Some Researches upon a Spirillum Associated with Abortion in Ewes". Dr. H. J. Washburn of the B. A. I., Washington, D. C., was to present a paper on "Diseases of Sheep". He was unable to be present and his paper did not reach the secretary until after the literary program was over. The paper will be published in the proceedings of the Society however. Dr. V. A. Moore read an excellent paper upon "The Law Relative to the Physical Examination of Cattle". Dr. Williams played his usual valuable part with "A Method for Measuring the Reproductive Efficiency of Cattle". In the afternoon Dr. J. F. DeVine gave a very interesting and instructive talk on "The Control of Abortion Disease and its Allied Ailments by the Practitioner." Dr. R. M. Kingston talked on "The Use of Garbage in the Feeding of Hogs." Dr. Kingston has had valuable experience in this field and it was reflected in his talk. Dr. S. A. Goldberg closed the literary part of the program with an illustrated talk on "The Differential Features Between Melanosis and Melanosarcoma." These papers will be published in the various veterinary journals of this country as well as in the proceedings and so no fuller discussion of the literary work will be attempted here.

A shore dinner was provided for the veterinarians at the Shelburne, Brighton Beach, on Thursday night. This was well attended and very greatly enjoyed. The dinner was followed by a night at Coney Island. Most of the party were much in-

terested in this resort. Some of them at least made three separate visits. We had an excellent scientific and practical program from which all obtained great benefit. Coney Island was a healthy stop-gap between more serious efforts.

The third day of the meeting was set apart for the clinic. This was held at the hospital of Gannett & Risley, 74 Adams St., Brooklyn. The clinic was interesting and helpful. So many cases were found on hand that a lunch was served at noon at the hospital in order to finish the work in the afternoon. Dr. S. A. Goldberg was scheduled to give a post mortem demonstration at the clinic but it was found necessary to have this work done the day before.

A large number of the members and visitors stayed for Saturday in order to make the trip to the Lederle Antitoxin Laboratories at Pearl River, N. Y. Those who did were greatly repaid. We not only saw this well equipped and sanitary institution, but were allowed to see the steps in the preparation of the different serums and antitoxins. It is very unusual to add a fourth day to the time of the meeting but Dr. Eichhorn and his staff made this one of the best days of the meeting for those of us who were privileged to stay for it. The whole day was provided for by the Laboratories. This included a most excellent lunch served to us by the members of the staff who were supervised in this part of the entertainment by Mrs. Eichhorn.

Dr. H. S. Beebe of Albion, N. Y., was elected President, Dr. Wright J. Smith, Kingston, N. Y., Vice-President; Dr. C. E. Hayden, Ithaca, N. Y., Secretary-Treasurer; and Dr. H. J. Milks, Ithaca, N. Y., Librarian.

Dr. V. A. Moore invited the Society to Ithaca for the next annual meeting. The invitation was accepted. Ithaca will be a good place to look forward to for next year. Dr. Cassius Way and the other members of his committee set the standard a little higher than usual at Brooklyn. Ithaca will at least keep up to that standard at the next annual meeting.

C. E. HAYDEN.

Dr. H. W. Wilson has recently received his honorable discharge from the army and is now located at Helena, Ark.

Capt. Jos. F. Crosby has been transferred from Camp Grant, Ill., to Camp Knox, West Point, Ky.

COMMUNICATIONS

FETISH WORSHIP.

Editor, Journal:

Is not the time ripe for a return to sane methods in the matter of admission to the Veterinary Schools? Probably every Dean in the land finds himself yearly face to face with the necessity of refusing admission to young men of high character, possessed of a fair elementary education, familiar with farm life, and farm animals and, best of all, endowed with the belief that Veterinary Medicine is the life work they most ardently desire. We believe that insistence on high school semesters or Regents' counts is based upon a common error, *i. e.*, that the acquisition of high school diplomas or Regents' counts constitutes a liberal education.

The advocates of this system lay stress on the impossibility of getting a veterinary education if these preliminaries are lacking.

A little quiet thought will show how untenable their position is. We throw down this challenge. "There is no subject in the curriculum of any Veterinary School on this continent that cannot be mastered by a student who has passed the Grammar Grades of a modern public school and has also had *two years* High School facilities in Algebra and Plain Geometry".

LANGUAGES ARE USEFUL, NOT ESSENTIAL.

No one appreciates more fully than the writer the advantages of a good general education. It smooths one's way, renders life worth living, allows its possessor to withdraw himself from the petty cares of the world and rest in the contemplation of literature or art.

Other things being equal, the highly educated veterinarian has a better social position.

The present methods deprive us of a class that are in every way desirable, *i. e.*, the country bred man who has reached perhaps his middle twenties, and is irresistibly drawn to Veterinary Medicine.

He has learned to stand alone, knows the value of time, money and application, *and once in the profession, he makes*

good. Why injure at once the stockowner, the schools and the profession by the perpetuation of this academic nonsense?

Say to the student: "You will find this school easy to get into, hard to get out of."

Let him take the chances—he will rarely fail himself or you.

No doubt many teachers of Veterinary Medicine feel like I do about this matter.

Let us get together and insist on the modification of this un-American method of cultivating the spirit of class.

Very truly yours,

THOS. B. ROGERS, *D. V. S.*

OKLAHOMA NOTES.

One of our dispensers of anti-hog cholera serum has recently been convicted in the district court for causing the death of about 200 pigs. The plaintiff claimed that the party doing the vaccinating guaranteed good results. The jury assessed the damages at $3,000.00.

The case will be appealed, since it is claimed that the pigs died from causes over which the operator had no control.

Dr. E. V. Robnett, State Veterinarian, has recently tested 55 head of Holstein heifers which were in the hands of a dealer in the southwest part of the state. Twenty-three reactors were found.

These cattle were part of four carloads recently received from New York and it appears that some of these cattle have been trailed into Texas.

State authorities report a great many herds of sheep as being infested with stomach worms. The copper sulphate treatment is giving good results.

Dr. H. H. Kettler, of the B. A. I. force, has been transferred to Hog Cholera Control Work at Fort Worth, Texas, effective August 11th.

Dr. Ivan W. Allen, who has been with the Army Veterinary Corps for about two years, has been reinstated on the meat inspection force, effective August 1.

Dr. H. W. Ayres has been appointed as Deputy State Veterinarian. He gives most of his time to tuberculosis eradication.

J. S. GROVE, *Resident State Secretary.*

NECROLOGICAL.

DR. CHARLES M. COOPER.

Dr. Charles M. Cooper died at Kansas City, July 2, 1919. Born in Trenton, Butler County, Ohio, October 26, 1876, and entered the service of the Bureau of Animal Industry as a tagger in December, 1902. He was previously engaged as a teacher in public schools. He was graduated from Kansas City Veterinary College in 1906, and was appointed a veterinary inspector in the Bureau of Animal Industry through civil-service examination. He was assigned to duty as an abattoir inspector and rendered efficient service.

DR. CHARLES F. COLSON.

Dr. Charles F. Colson, veterinarian in the Bureau of Animal Industry stationed at Union Stock Yards, Chicago, Ill., died July 2, 1919. Born at Lake Geneva, Wisconsin, April 29, 1879. Graduated from the McKillip Veterinary College in 1905, and took a special course for six months in pathology and diagnosis at that College following graduation. Appointed veterinarian in the Bureau through civil-service examination June 12, 1905, and assigned to duty at Seattle, Washington. He was transferred to Chicago, Ill., in 1906, and has been employed there most of the time since that date.

The Eastern Iowa Veterinary Association will hold its next regular meeting in Muscatine, Iowa, on October 8-9th. Elaborate arrangements have been made by the committee in charge for a program and entertainment, and a large and successful entertainment is anticipated. All neighboring veterinarians are invited to attend. The program will be especially interesting because it will deal with some of the newer conditions which have arisen in Iowa during the past year.

Dr. Charles Thigpen is now at Anniston, Ala.

REVIEWS.

THE EXAMINATION OF THE URINE OF THE HORSE AND MAN.

By PIERRE A. FISH, D. Sc., D. V. M., Professor of Veterinary Physiology, New York State Veterinary College, Cornell University.

Third Edition revised. 79 pages. The Comstock Publishing Company, Ithaca, N. Y., 1919. Cloth, price $1.75.

It is unnecessary to allude to the importance placed by the practitioner of human medicine on an examination of the urine as an aid to diagnosis and prognosis in the human patient; and while this has not been taken advantage of to the same extent by the Veterinarian, there is no valid reason why this should be the case at the present time with the advanced state to which the education of the veterinarian has attained.

The author early realized that simplification of methods, without too great a sacrifice in accuracy, is essential for satisfactory examination, especially by veterinarians, and has, in subsequent editions, faithfully endeavored to eliminate apparent difficulties, until in this latest edition, by making certain changes and some aditions, he has been able to bring the work up to date.

Dr. Fish is to be congratulated for presenting to the Veterinary Profession this valuable work on a subject of such great importance, which is bound to be taken more advantage of, as time goes on, as a valuable aid to diagnosis in veterinary patients.

The work contains some ten chapters, with illustrations. Chapter I is devoted to the Secretion of Urine; Chapter II., to Quantity, Color, etc.; Chapter III, to Qualitative Tests; Chapter IV, to Organic Constituents; Chapter V, to Abnormal Substances in the Urine; Chapter VI, to Bile, Blood, etc.; Chapter VII, to Quantitative Analysis; Chapter VIII, to Volumetric Methods; Chapter IX, to Chemical Examination of Urinary Deposits, etc.; Chapter X, to Microscopical Examination of Urine, etc., and an Appendix with Formulæ for Reagents.

The name of Dr. Pierre A. Fish attached to any work bearing upon the subject of veterinary physiology is sufficient to warrant the authenticity and accuracy of the subject matter; and we feel that this latest edition of his work on the Urine

should occupy a prominent place in the library of every progressive veterinarian.

The publishers have every reason to feel satisfied with the appearance of the publication. W. H. D.

BOOK OF VETERINARY DOSES, THERAPEUTIC TERMS AND PRESCRIPTION WRITING.

By PIERRE A. FISH, D. Sc., D. V. M., Professor of Veterinary Physiology, New York State Veterinary College, Cornell University.
Fifth Edition revised. 185 pages. The Comstock Publishing Company, Ithaca, N. Y., 1919. Leather, price $1.50.

The value and popularity of a work is generally evidenced by the number of editions through which it passes. This being the case, it is obvious that previous editions of Dr. Fish's excellent little work have fully met that requirement, and that the Fifth Edition will be as eagerly sought after as those which have preceded it.

This little pocket edition is a veritable *multum in parvo* concerning the topics to which it is devoted, as may be inferred from the following divisions: Dosage or Posology; Veterinary Doses; Therapeutic Terms; Termination of Medical Terms; Prescription Writing; Weights and Measures; The Principles of Combining Drugs in a Prescription; Examples of Prescriptions; Thermometric Equivalents; Deliquescent and Efflorescent Salts; Latin Words and Phrases with Abbreviations and English Equivalents; Incompatibility; Examples of Incompatibility in Prescriptions; Poisons and their Antidotes; Classification of Medicines according to their Physiologic Actions; Physiological Points for Practioners, Etc.

The author's reputation as a physiologist and therapeutist, and the success to which previous editions of this work have attained, is so well known to the Veterinary Profession, both at home and abroad, that the success of his latest effort is already assured.

The publishers are to be commended for the excellent manner in which they have performed their part.

W. H. D.

After having served with the veterinary corps of the army, Dr. R. F. Vermilya has been discharged and is now with the B. A. I., at St. Paul, Minn.

MISCELLANEOUS.

AGRICULTURAL APPROPRIATION BILL PASSED.

On the evening of July 24, the President signed the bill making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1920. It is very gratifying to those who are interested in live stock matters that the Congress in its wisdom has seen fit to increase the appropriation for conducting some of the important activities of the Bureau of Animal Industry.

In the item for inspection and quarantine work, including the eradication of scabies in sheep and cattle, there is an increase of $21,338. This increase was allowed for the purpose of combating sheep and cattle scabies, which during the past year has reappeared in some localities in the Western States.

An increase of $1,000,000 over the amount of last year is allowed for the control and eradication of tuberculosis of animals, which gives the Bureau $1,500,000 for this work. However, in providing this increase, Congress has stipulated that the amount provided, the sum of $500,000 is to be used for administrative and operating expenses, while $1,000,000 is to be used for the payment of indemnities for cattle destroyed. It was evidently the desire of Congress that the owners of cattle destroyed on account of being affected with tuberculosis should receive the greater portion of the appropriation in the way of indemnities, and that the benefits to be derived by the public at large through the eradication of the disease should be taken care of by the use of one-third of the appropriation. It is considered that the owners of the cattle destroyed suffer the greatest loss, and, therefore, they should receive the direct benefits of the appropriation through the use of the greater portion of the funds for indemnities.

In the item for animal husbandry work there is an increase of $19,000 over last year's appropriation. This additional sum is to be used for the investigation of the soft pork problem, which is becoming more and more important with the rapid development of the swine industry in the Southern States.

The item of hog cholera control work provides the sum of $446,865. This appropriation is nearly equal to the combined

sums of the regular appropriation ($247,600) and the allotment from the War Emergency appropriation ($202,000) that was used during the last fiscal year in combating hog cholera. The available funds for this year's work will enable the Bureau to continue these activities on about as extensive a scale as during the last year of the war.

In addition to the regular annual appropriation of $3,000,000 for carrying out the provisions of the Federal Meat Inspection law, there has been appropriated an additional sum of $803,960 for the present fiscal year, which is $426,760 over last year's appropriation. Of this increased amount Congress has stipulated that $100,000 may be used for the inspection of horse meat. The balance of this increased appropriation will be used for advancing the salaries of the Meat Inspection employees. An important provision has been included in the law authorizing the Secretary of Agriculture to pay employees of the Bureau detailed to meat inspection establishments for all over-time work performed at such establishments, at such rates as may be determined by the Secretary, and to accept from the establishments reimbursements for the sums paid out by him for such over-time work. J. R. M.

A PRECURSOR OF MENDEL.

Besides the work of the two Englishmen, Knight and Herbert, an experiment from the first half of the nineteenth century, which has elicited considerable interest, because of its suggestion of the later discoveries of Mendel, is that of John Goss, of Hatherleigh, Devonshire, England, with garden peas. In the summer of 1820, Goss pollinated flowers of the Blue Prussian variety with pollen of a dwarf pea known as Dwarf Spanish, obtaining as the result of the cross, three pods of hybrid seeds. In the spring of 1821, when he opened these pods for planting, he was surprised to find that the color of the seeds (*i. e.*, of the cotyledons), instead of being a deep blue like those of the female parent, was yellowish-white like that of the male. Here was evidently a case of complete dominance of yellow-white over blue cotyledons. However, the plant growing from these seeds in that season "produced some pods with all blue, some with all white, and many with both blue and white peas in the same pod." Here was evi-

dently a plain discovery of the fact of segregation, according to what later became known as Mendel's law.

The following spring (1822) he separated the blue peas from the white, sowing the seeds of each color in separate rows. He found that the blue seeds, which we should now call the "recessives," produced in turn only blue seeds; while the white seeds, or "dominants", as they are now called, "yielded some pods with all white, and some with both blue and white peas intermixed." Here, then, is the typical case of the segregation of the heterozygotes or hybrid dominants.

Although Goss in this experiment undoubtedly made evident the fact of dominance and segregation, he did not recognize them as such, nor did he, apparently, sow the seeds of his different plants separately, or make counts of the number of seeds of the two colors found on each separate plant, as did Mendel in his experiments.

Goss was chiefly interested in the question of the possibility of the "new variety" having superior value as an edible pea, and yet remarked that, in case it possessed no superior merit, there yet might be "something in its history that will emit a ray of physiological light." However, the "physiological light" did not appear until after the discovery of Mendel's papers in 1900.—*Herbert F. Roberts in Journal of Heredity.*

Captain Lester R. Smith of the Veterinary Corps, United States Army, has just returned from duty over-seas. He entered the military service as second lieutenant and was not long in being promoted to the grade of Captain. Before joining the A. E. F. he was an employee of the B. A. I., and is now coming back to the service and reports for duty at Fort Worth, Texas, where his address will be 602 Flatiron Building. He predicts that the New Orleans meeting will be the largest ever held and the boys who wore khaki will be well represented. Dr. Smith spent about two weeks with his brother, Dr. R. L. Smith, in Natchitoches, La., where he and his charming wife made his visit one continuous round of pleasure, and making him doubly glad that he could be back to the good old U. S. A. The Captain rather hesitated about leaving Louisiana, particularly Natchitoches, because of the sincere hospitality of its splendid people, who are famous for allowing their guests to invariably leave with one regret, notably because they cannot linger a little longer; however, they make up for this and quickly hurry back.

TICK ERADICATION IN THE SOUTH.

Status of Cattle dipping for the month of July, 1919, in the following states:

	Number of dippings.
Alabama	1,045,425
Arkansas	686,799
Florida	227,260
Georgia	519,444
Louisiana	1,405,535
Mississippi	370,284
North Carolina	6,963
Oklahoma	574,649
South Carolina	158,208
Texas (North)	1,691,157
Texas (South)	512,558

LOUISIANA STATION BULLETIN ON ANTHRAX.

Louisiana Experiment Station Bulletin No. 168 on The Transmission of Anthrax by Non-Biting Flies by Dr. Harry Morris, Bacteriologist and Assistant Veterinarian, has just been published, and contains some very interesting and important information on the subject which should prove valuable to the veterinary sanitarian.

Dr. F. M. Kearns has purchased the practice and hospital equipment of Dr. E. M. Lang at Louisville, Ky. Dr. Lang has returned from practice and has bought a large stock farm near Louisville.

Dr. J. R. Houchins has received his discharge from the army at Camp Bragg, N. C., and is now located at De Funiak Springs, Fla.

Dr. Michael Shipley is now at Little Rock, Ark. His former address was Cookeville, Tenn.

Lt. Max Siereveld has been transferred from Texas to Camp Eustis, Va.

NATION-WIDE DRIVE TO IMPROVE ALL LIVE STOCK.

United States Department of Agriculture Announces Campaign to Eliminate Scrub Sires from Breeding.

"Better Sires—Better Stock."

This is the slogan of a national better live-stock crusade, to get actively in motion October 1, that is announced by the United States Department of Agriculture, working in cooperation with the State agricultural colleges and other agencies interested in live-stock improvement. The campaign looks forward to the future food needs of this country's increasing population and results from long and careful observation of the live-stock industry in this country, and was planned after extensive consultation with specialists and breeders. The plan is to hasten the replacement of the multitude of scrub domestic animals in the United States with pure-bred or high-grade stock, and also to improve the quality of pure-breds themselves. The goal in view is greater efficiency in production.

The campaign will be the first organized crusade in a large country to improve all live stock simultaneously. It will interfere in no way with any work in live-stock improvement now being conducted, but makes all the work more definite and effective by providing official recognition for progressive breeders.

The campaign will be supervised from the Department of Agriculture in Washington, and in each State by the State agricultural college. County agents and other field workers of the Department of Agriculture and of the State colleges will handle the campaign locally. Every live-stock owner actively cooperating and keeping and using none but pure-bred sires of good quality will be given an emblem as an official recognition of meritorious effort.

Dr. W. A. Curtis has been transferred from Chanute, Kans., to Kansas City, Mo.

Dr. J. M. Twitchell has returned from France, where he served with the A. E. F. at a Veterinary hospital for over a year, and is again located at Center, Colo.

I WONDER.

I wonder if the new regulations of the U. S. government for the testing of milch cattle in transport from one state to another, with the rigid provisions therefor which went into effect July 1, do not owe at least their inception to the fight Dr. Winchester of this city is putting up against crooked methods in admitting and testing diseased cows. The local doctor may be more than a voice crying in the wilderness, after all, as slowly but surely the public is being awakened to the menace the tubercular cow is to the public health.

—*The Leader, Lawrence, Mass.*

As the Journal goes to press we are in receipt of a neat little booklet "Recuerdo de Buenos Aires", from Dr. H. L. Darby, who is still in the tropics as a specialist for Sherwin-Wiliams Co. The photographs are splendid representations, depicting the magnificient beauty of Buenos Aires. It appears to be a city of unusual attractiveness and we guess the doctor will hesitate about leaving when he has completed his investigations.

The JOURNAL office is in receipt of numerous letters from members of the A. V. M. A., from all parts of the country stating that they will be on hand for the New Orleans meeting. Prospects are bright for a large attendance, and judging from the letters received the men who wore the khaki will be there in numbers, for even from far off France comes inquiries as to the time of the meeting, rates, etc.

Dr. E. P. Flower, Secretary and Executive Officer of the Louisiana State Live Stock Sanitary Board, is taking a much needed rest in the "Land of the sky," North Carolina.

Dr. M. H. Gandy, Shreveport, La., is temporarily in charge of offairs in the office of the Louisiana State Live Stock Sanitary Board.

Dr. E. B. Shaw, formerly engaged in tick eradication work in Louisiana, has been transferred to the work of hog cholera in the same state.

Are you trying to immunize hogs against Mixed Infection with salt water?

PRACTITIONERS SHOULD NOT BE MISLED

by claims for the value of bacterins based on mere volume, without taking into consideration the

BACTERIAL COUNT

which is the only index as to the quality and immunizing value. The salt solution is merely the vehicle for the suspension of the killed organisms. It requires technical skill and expense in the preparation of our product containing the

45 BILLION (45,000,000,000) KILLED ORGANISMS

The relative value of Jen-Sal Mixed Infection Bacterin as compared with other products on the market, containing 20, 14 and even 8 billion, on a basis of 10c per dose, lays bare the fact that you are buying $55.55 worth of salt solution with each 1,000 doses of the 20 billion count and $82.22 worth of salt solution with the 8 billion count. Is it any wonder that some folks need kegs for marketing Mixed Infection Bacterin; others need highly colored labels and rubber stamp letters, quoting cheap prices on cheap products?

WHAT A PRACTITIONER NEEDS

is results that will gain for him the confidence of the stockowners in controlling mixed infections.

If you are satisfied with the uncertain results obtained with the weak suspensions, let us give you a quotation accordingly.

JEN-SAL MIXED INFECTION BACTERIN (Swine)

Prepared from cultures of the following organisms and in the percentages indicated; each 2-mil dose containing 45 billion killed organisms:

B. suisepticus	45%
B. suipestifer	25%
Staphylococcus Albus	10%
Staphylococcus Aureus	10%
B. coli	10%

Especially indicated in the treatment of complicated swine plague of the chronic type and the enteric form of swine infection.

Marketed as follows:

Single dose ampoules	Per dozen,	$2.00
20-mil bulk containfer (10 doses)	Each,	1.20
50-mil bulk container (25 doses)	Each,	2.50

Special price on 500 and 1,000 dose lots.

Prices quoted subject to 5 per cent discount for cash.

THE JENSEN-SALSBERY LABORATORIES

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TETANUS ANTITOXIN

Highly refined and concentrated, supplied in both syringe and ampul packages containing from 500 to 5000 Units in a package.

We have facilities for unequaled service, thus all orders receive our prompt attention.

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GUARANTEED TO GIVE SATISFACTION

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Mistura Argenti Composita

Accepted and used by the Veterinary Profession since 1900

For Splints, Spavins, Curbs, Side Bones, Shoe Boils, Ossifications, Inflamed Tendons, Bursal, Lameness, Etc.

ADVANTAGES

Can be applied in a few seconds.
Does not soil the hands.
Does not blemish the horse.
Horse may be used every day.
Lower in price than imitations.
Guarantee label may be detached leaving only your name.

WE TAKE THE RISK

If "M-A-C" Fails on Fairly Selected Cases We Will Replace Your Loss.

PRICES

Single Bottle	$ 2.00
½ doz. and one free	5.00
½ " " two "	8.00
1 " " four "	15.00
2 " " eight "	25.00

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"VETERINARY PHARMACEUTICALS"

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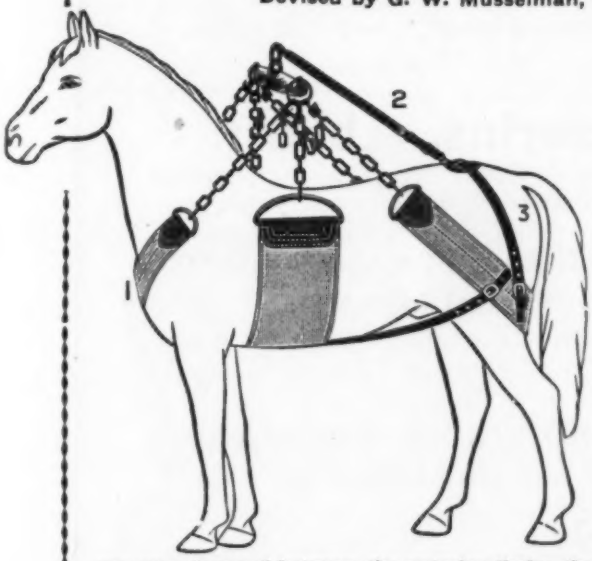

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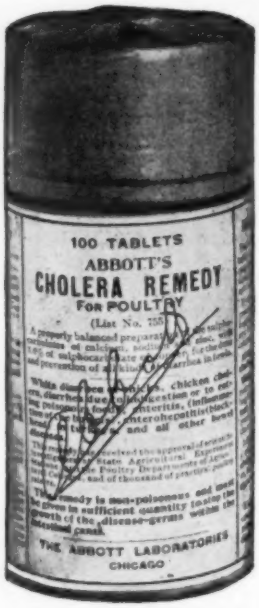

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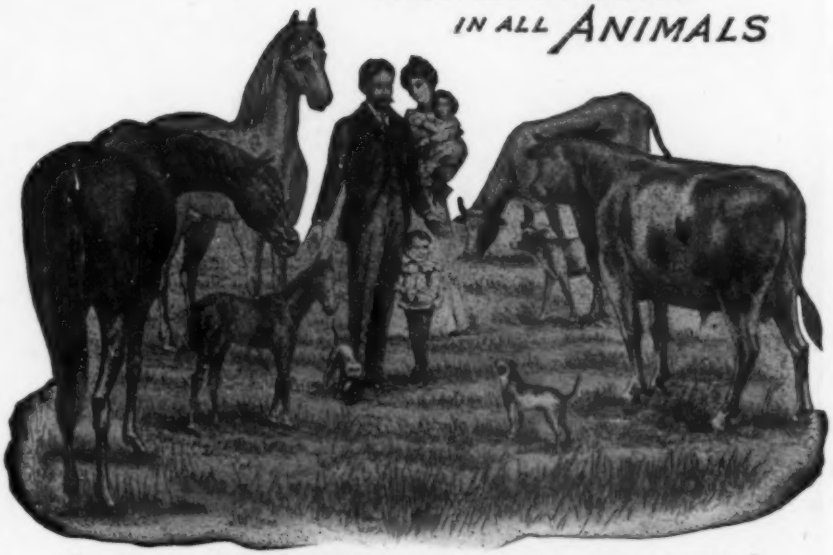

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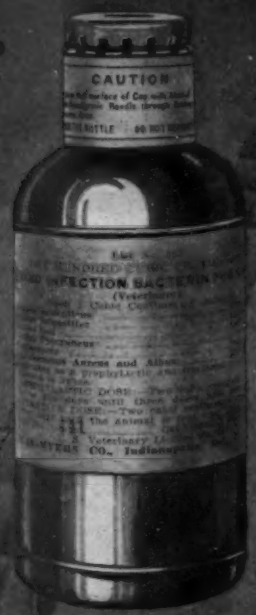

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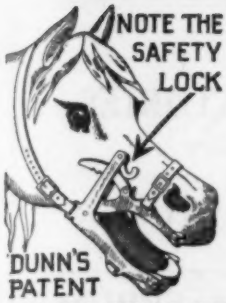

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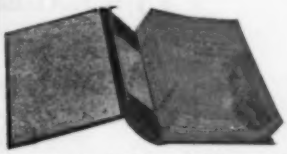

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Package of six 2 c.c. bottles	$1.50	$ .90

The Control of Contagious Abortion

Abortion disease of cattle causes losses to the dairy industry which equal and probably surpass those incurred from tuberculosis. Very few dairy herds of any size escape the infection, with its attendant evils of impaired milk flow, sterility, abortion, difficult parturition, retained afterbirth, and loss of the calf crop.

Extensive field experiments conducted in England show that while protection against contagious abortion is afforded by bacterin (suspensions of killed B. abortus bacilli) immunization, much better results are obtained where true vaccines (living B. abortus bacilli) are employed. The report of the English Commission has been confirmed by experimental work in this country. In addition to better protection from the use of B. abortus vaccine, immunization may in most instances be accomplished by a single inoculation. Statistics compiled by the English Commission show that abortions were reduced to less than 4% by vaccination with B. abortus vaccine (living organisms).

Immunization—Two products are available for the prophylactic immunization of cattle against Contagious (Infectious) Abortion: B. Abortus Bacterin, a sterile suspension of many strains of killed B. abortus bacilli, and B. Abortus Vaccine, a living culture of many strains of B. abortus bacilli.

MAY 20, 1919 Note *New* Net Price

We prepay all Shipping Charges

Order from Berkeley, Calif., *or* 180 N. Dearborn St., Chicago, Ill.

THE CUTTER LABORATORY

Cutter's B. Abortus Bacterin has been extensively employed with satisfactory results for the immunization of cows against abortion disease. It is safe to use and for this reason should always be the choice of the operator for the immunization of animals in herds which do not have a definite history of infection.

Cutter's B. Abortus Bacterin is supplied in packages containing four 2 c.c. bottles, serial dosage. Injections of the bacterin are made subcutaneously in the shoulder or neck region. The content of bottle No. 1 is given first and is followed at an interval of five to ten days by the injection of the content of bottle No. 2. The content of bottle No. 3 is next given and then No. 4, the intervals between injections being the same (five to ten days). It is always best to give the vaccine treatment following parturition or abortion and before breeding. If it is desired to treat infected cows during pregnancy, B.Abortus Bacterin should be employed and the treatment given as early as possible. It is not desirable to begin treatment during the last three months of pregnancy.

Cutter's B. Abortus Vaccine (living culture of B. abortus bacilli) is supplied for use on known infected herds. B. Abortus Vaccine since it contains the living organisms will give a higher and more durable immunity than may be obtained from B. Abortus Bacterin. Only one injection of vaccine is usually required. The vaccine is injected subcutaneously, observing the usual aseptic precautions, in the neck or shoulder region. The dose of Cutter's B. Abortus Vaccine is 5 c.c. and the treatment should be given following parturition or abortion and before breeding.

Cutter's B. Abortus Bacterin:

	List.	Net.
Package of four 2 c.c. bottles	$1.00	$ .60

Cutter's B. Abortus Vaccine (Living):

	List.	Net.
Package of 50 c.c. (10 doses)	$4.00	$2.40

Anthrax

Cure and Prevention

In California, Texas and Louisiana as in other states in which Anthrax is prevalent, Cutter's Anthrax Vaccine and Anti-Anthrax Serum are the recognized best insurance against losses from Anthrax.

In certain badly infected territory they gave positive protection where others failed; and wherever used their superiority over others has been established by comparison of results.

To Prevent Anthrax, the Serum-Vaccine simultaneous method is recommended, though users who have had good results year after year from the use of Cutter's Anthrax Vaccine "alone" still continue this practice.

To Cure Anthrax.—Thousands of head have been saved during the last four years by the use of Cutter's Anti-Anthrax Serum in virulent outbreaks on badly infected land.

Write for Special Literature concerning these products, which are prepared in our new special Anthrax plant, the largest and most up-to-date in the world, devoted exclusively to the production of Anthrax Vaccines and Anti-Anthrax Serum.

MAY 20, 1919 Note *New* Net Price

We prepay all Shipping Charges

Order from Berkeley, Calif., *or* 180 N. Dearborn St., Chicago, Ill.

THE CUTTER LABORATORY

Hemorrhagic Septicemia and Mixed Infection Vaccines for Swine

A Plain Talk About Dosage

The organisms which cause Hemorrhagic Septicemia and Mixed Infection Disease in Swine are of a type that vaccines prepared from and properly representative of the varying strains of organisms concerned cause considerable reaction when given in overdose to susceptible animals.

It is also true of all good vaccines prepared from these organisms that while the proper initial dose will produce a high degree of immunity a second and larger dose, five to seven days later, will increase both the degree and persistence of this immunity. The same may be said of a third dose, but for all practical purposes a second dose is sufficient.

Now it would be very easy for us to follow the line of least (advertising) resistance and dilute our vaccines down to a point where "a liberal dose" (4 c.c. or any other quantity) could also be recommended by us. We could also depend on the very satisfactory results usually obtained from a single dose and say nothing about the desirability of giving a second and larger dose, five to seven days later, when conveniently possible.

But we prefer to give the veterinarian the benefit of the knowledge of these facts so that he may apprise the stock-owner and let him use his own judgment as to whether or not he shall have the second treatment given.

There can be no argument on this point of the advantage of giving a second and larger dose of any prophylactic vaccine, especially as concerns the organisms in question in these diseases.

Cutter's Hemorrhagic Septicemia and Mixed Infection Vaccine (Swine) are of uniformly high bacterial count and are truly representative of the varying strains of the organisms found concerned in the diseases against which they are to be used. Give 2 c.c. (or 3 c.c. to very large animals) in perfect confidence that you are giving all that is necessary to obtain the best results pos-

sible to obtain from a single vaccination with any vaccine no matter what the dosage.

If you give a second treatment with any vaccine, the animal is prepared to stand a larger dose than the initial one, and a greater and more persistent immunity will be secured if you double the initial dose.

By giving a larger second dose of a sterile bacterial vaccine (bacterin) you are approximating the results obtained by giving a second dose of a living vaccine (as, for instance, Anthrax Vaccine) that contains living organisms of a higher degree of virulence than those contained in the primary vaccine.

Just keep these facts in mind and you will not be confused by catch-penny talk about "liberal dosage" and, by inference, the consequent lack of necessity of a secondary vaccination.

Even if your client decides that a single vaccination is all that he cares to be bothered with, you will have done your duty by him if you give him the straight facts, and he will have no "come-back," as he might if you said nothing about the desirability of a second treatment.

SUMMARY

Cutter's Hemorrhagic Septicemia Vaccine (Bovine): A sterile suspension of selected strains of B. bovisepticus in physiological salt solution. It is a sterile product and may be used with entire safety for the prophylactic immunization of susceptible cattle against hemorrhagic septicemia.

Prophylactic Dose.—Give 2 c.c. of vaccine subcutaneously. It should be followed, if possible, by a second injection of 4 c.c. of vaccine five to seven days later.

Cutter's Hemorrhagic Septicemia Vaccine (Sheep): A sterile suspension of B. Ovisepticus in physiological salt solution. This vaccine is indicated for the prevention of hemorrhagic septicemia in sheep and goats.

MAY 20, 1919 Note *New* Net Price

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Order from Berkeley, Calif., *or* 180 N. Dearborn St., Chicago, Ill.

THE CUTTER LABORATORY

Prophylactic Dose.—Give 2 c.c. of vaccine subcutaneously. It should be followed, if possible, by a second injection of 4 c.c. of vaccine five to seven days later.

Cutter's Hemorrhagic Septicemia Vaccine (Swine): A sterile suspension of B. suisepticus in physiological salt solution. This product is indicated for the prevention of hemorrhagic septicemia (swine plague) in swine.

Prophylactic Dose.—Give 2 c.c. of vaccine intramuscularly. It should be followed, if possible, by a second injection of 4 c.c. of vaccine five to seven days later.

Cutter's Mixed Infection Vaccine (Swine): A sterile suspension of selected strains of B. suisepticus, B. cholera suis (Suipestifer), Coliform bacilli, B. pyogenes, Streptococci and Staphylococci isolated from cases of mixed infections in swine. The use of Mixed Infection Vaccine (Swine) is advised for the prophylaxis and treatment of swine plague and its complications (mixed infections). Since this product contains not only B. suisepticus, but also the important group of organisms so often encountered in the complications following hog cholera and swine plague, usually termed mixed infections, we would advise Veterinarians to select it for general use unless they are certain that the disease with which they are dealing is caused by B. suisepticus alone.

All of Cutter's Hemorrhagic Septicemia Vaccines, as well as Cutter's Mixed Infection Vaccine (Swine), are sterile products and may be used without any possible danger of introducing infection. Injections of vaccines in swine should be made intramuscularly with the usual aseptic precautions.

Cutter's Anti-Hemorrhagic Septicemia Serum (Bovine) is a sterile serum prepared from the blood of horses which have been hyperimmunized against many strains of B. bovisepticus. It has curative properties and is indicated in the treatment of sick animals. The administration of from 20 to 50 c.c. of this serum will promptly check the spread of the disease among exposed animals in actual outbreaks.

Cutter's Anti-Mixed Infection Serum (Swine) is a sterile serum prepared from the blood of horses immunized against

B. suisepticus, B. cholera suis and selected strains of coliform bacilli all isolated from cases of mixed infection in swine.

When administering serum to swine, make the injections into the loose connective tissue of the armpit, flank, or else deeply into the muscular tissues. Subcutaneous injections in swine are not satisfactory, as absorption is slow on account of the layer of fat underlying the skin.

Hemorrhagic Septicemia Vaccine (Swine):

	List.	Net.
Bottle containing 20 c.c.	$2.00	$1.20

Mixed Infection Vaccine (Swine):

	List.	Net.
Bottle containing 20 c.c.	$2.00	$1.20
Bottle containing 100 c.c.	7.50	4.50
Bottle containing 250 c.c.	17.50	10.50

Hemorrhagic Septicemia Vaccine (Bovine):

	List.	Net.
Package of six 2 c.c. bottles	$1.50	$ .90
Bottle containing 20 c.c.	2.00	1.20

Hemorrhagic Septicemia Vaccine (Sheep):

	List.	Net.
Bottle containing 20 c.c.	$2.00	$1.20
Bottle containing 100 c.c.	7.50	4.50

Anti-Mixed Infection Serum (Swine):

	List.	Net.
Bottle containing 50 c.c.	$1.25	$1.00
Bottle containing 250 c.c.	6.25	5.00
Bottle containing 500 c.c.	12.50	10.00

Anti-Hemorrhagic Septicemia Serum (Bovine):

	List.	Net.
Bottle containing 20 c.c.	$2.00	$1.20
Bottle containing 500 c.c.	16.25	9.75

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THE CUTTER LABORATORY

Influenza Mixed Vaccine (Equine)

Prepared from many freshly isolated strains of streptococci (S. Equi) and staphylococci from typical cases of equine distemper and influenza.

Indicated in the prophylaxis and curative treatment of distemper, strangles, influenza, shipping fever, pneumonia, as well as in all complications and sequelæ of these diseases.

PRICES	LIST.	NET.
Package of six c.c. bottles	$1.50	$ .90
20 c.c. bottle	2.00	1.20
Package of 4 syringes	2.50	1.50

Anti-Distemper and Anti-Influenza Serum

(Equine)

For the prevention and cure of all distemper and influenzal conditions in horses and mules.

PRICES	LIST.	NET.
10 c.c. in syringe container	$1.00	$ .60
50 c.c. bottle	2.50	1.50

Navel Ill Mixed Vaccine

(Equine)

This vaccine contains all the organisms usually found concerned in navel infection, including B. Abortus Equi.

PRICE	LIST.	NET.
Package containing six 2 c.c. vials	$1.50	$ .90

Pneumonia Mixed Vaccine

(Equine)

Indicated in the treatment of pneumonia, pleurisy, strangles and influenza.

PRICE	LIST.	NET.
Package of six 2 c.c. vials	$1.50	$ .90

Polyvalent Mixed Bacterin

(Equine)

Indicated in the treatment of all suppurative conditions, as well as in influenzal and catarrhal conditions.

PRICE	LIST.	NET.
Package of 4 syringes	$2.50	$1.50

The Intradermal Test

IS O. K.

It's Just a Matter of Using the Right Tuberculin
And the Right Tuberculin is Cutter's

Cutter's Intradermal Tuberculin was used in official tests of thousands of dairy cattle in California last year with results more satisfactory than were ever obtained anywhere with any other Tuberculin or any other method of testing.

Try "Cutter's" and verify the certainty of the test and the Tuberculin.

Prices—Intradermal Tuberculin	List.	Net.
Pkg. containing one 2 c.c. bottle (sufficient for 10 to 20 tests)	$ .50	$ .30
Pkg. containing four 2 c.c. bottles (sufficient for 40 to 80 tests)	1.50	.60

Prices—Regular Tuberculin	List.	Net.
Solution (ready for use) 2-dose bottles	$ .35	$ .21
Solution (ready for use) 5-dose bottles	.75	.45
Solution (ready for use) 10-dose bottles	1.25	.75
Solution (ready for use) 25-dose bottles	2.50	1.50
Syringe containing 1 dose ready to use	.50	.30

Cutter's Mallein

Is good enough for Uncle Sam. Thousands of doses have been used in testing horses and mules for Army use.

Intrapalpebral Mallein promises to supersede all other forms. Try it.

If you have testing to do, use "Cutter's" and be on the safe side. You can bank on accurate results.

Price	List.	Net.
Solution (ready for use) 5-dose bottle	$1.00	$ .60

For the Ophthalmic Test

Price	List.	Net.
Package containing 1 test tablet	$ .25	$ .15
Package containing 5 test tablets	.50	.30

For the Intrapalpebral Test

Price	List.	Net.
Package containing 4 1 c.c.	$2.00	$1.20

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THE CUTTER LABORATORY

CUTTER'S
Canine Distemper Vaccine
Prophylactic

Is a suspension of the B. Bronchisepticus for the prevention of Canine Distemper.

It should be administered in 2 c.c. doses at intervals of from 5 to 7 days.

PRICE	LIST.	NET.
Three bottles, one immunizing treatment	$ .75	$ .45

CUTTER'S
Canine Distemper Vaccine
For Treatment

Is a Mixed Vaccine, containing B. Bronchisepticus, Staphylococcus and B. Coli.

This vaccine has been used with considerable success in the treatment of Canine Distemper. The serum should also be used on valuable dogs.

PRICE	LIST.	NET.
Six 2 c.c. bottles, in serial dosage	$1.50	$ .90

CUTTER'S
Anti-Canine Distemper
Serum

Is especially indicated in the Curative Treatment of Canine Distemper, either alone or in conjunction with the Canine Distemper Vaccine (for Treatment).

The dose is 10 to 50 c.c. according to the size of the dog.

PRICE	LIST.	NET.
50 c.c. bottle	$2.50	$1.50

Other Products

Besides the products particularly listed in this issue of the Journal there are a number of other Cutter biologics for the horse, cow, sheep and dog.

Write for new "Therapeutic Index and Price List," and remember that on most of these products you will get straight 40% discount, all shipping charges prepaid.

Dependability

"A good name is rather to be chosen than great riches."

This old text isn't quoted to serve as pious camouflage, for honesty compels us to confess that there are really some sure-enough heathens among us. But it serves better than anything we can think of just now to illustrate the spirit of dependability that more or less unconsciously dominates our whole organization from the most humble worker up.

It has kept us from slighting any step in production, and from rushing on the market with "unseasoned" products. Products that only time could prove of sufficient worth to justify inclusion in the veterinarian's armamentarium.

It has kept up from making extravagant claims regarding the protective values of these new products. But every veterinarian who has had long experience with The Cutter Laboratory products knows that no better biologics are produced and that their special merit lies in their consistent dependability.

This spirit of dependability, and 20 years' experience in conducting high-grade laboratory processes, together with superior location and equipment, guarantee that Cutter products are uniformly the best possible for any laboratory to produce.

Dependability as to quality of products and promptness of service are added assets in your business, if you will let us serve you.

You can use Cutter Bacterial Vaccines in full confidence that high bacterial count is in the vaccine, not on the label; and the same may be said of the organisms represented to be contained in the vaccine. Strains are carefully selected with a view to the greatest polyvalency.

MAY 20, 1919 Note *New* Net Price

We prepay all Shipping Charges

Order from Berkeley, Calif., *or* 180 N. Dearborn St., Chicago, Ill.

THE CUTTER LABORATORY

COOPER'S
Saponified Cresol
Solution

50% Pure Cresol

An officially approved substitute for
Liquor Cresolis Compositus
in disinfection work under B. A. I. control.

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Established 1843

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"The Original Tick Dip"

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Used throughout the world.
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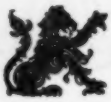
A SUPERIOR EVACUANT

Far Better Than Arecoline



IT PRODUCES RAPID EVACUATION, but largely eliminates the danger concurrent with the use of Arecoline.

ITS ACTION IS MORE PROLONGED, with a minimum of the depression usually following the use of Arecoline.

IT CAN BE USED WITH SAFETY where Arecoline would unquestionably be contraindicated.

It is appreciably LESS EXPENSIVE than Arecoline and is 100% MORE EFFICIENT.

Dr. C. B. Estey, of St. Cloud, Minn., says: *"P. V. S. is the best drug I have ever used."*

P. V. S. The Ideal Hypodermic Purgative. P. V. S.

Tube of ten tablets.....$1.25

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Is a valuable aid to VETERINARIANS in

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NECROBACILLOSIS POWDER

Rx 1450

CONTAINS:

Copper Arsenite — Sodium Hyposulphite
Copper Sulphate — Sodium Chloride
Charcoal

A powder intended for the treatment of the intestinal form of necrobacillosis in swine. It is also of decided value in preventing intestinal fermentation and toxin formation and will prevent the invasion of intestinal parasites.

DOSAGE

From a level to a heaping teaspoonful in feed twice a day, keeping the animal on sloppy feed for 3 or 4 days.

5-lb. carton $0.75
20 5-lb. cartons 12.50
100-lb. can 10.00

THE JENSEN-SALSBERY LABORATORIES

Kansas City, Mo.

TETANUS

THERE is probably no infection to which horses are more generally exposed during the months of spring and summer. The germ-laden dirt of streets, barns and stables is a constant menace because of the many foot-injuries—cuts, bruises, nail punctures, etc.—to which the animals are subject.

PROPHYLAXIS

The injection of Tetanus Antitoxin is a wise procedure in all cases in which there is reason to fear that infection with tetanus bacilli may have taken place. As a prophylactic the smaller doses—five hundred to fifteen hundred units—usually suffice.

TREATMENT

Successful curative results depend upon the administration of large doses of Tetanus Antitoxin in the initial stage of the disease. The toxins must be neutralized at once. If treatment is begun promptly upon manifestation of the disease, and the dose is large—ten thousand to twenty thousand units—the chance of success is highly favorable.

TETANUS ANTITOXIN, VETERINARY

(List Prices)

Bio. 746.	500 units in syringe container	per pkg.,	$0.75
Bio. 748.	500 units in rubber-stoppered vial . .	per vial,	.60
Bio. 741.	1500 units in syringe container	per pkg.,	1.25
Bio. 744.	1500 units in ½-oz. rubber-stoppered vial	per vial,	1.00
Bio. 735.	5000 units in syringe container	per pkg.,	4.00
Bio. 736.	5000 units in rubber-stoppered vial . .	per vial,	3.50

Kept in a cool place the antitoxin will retain its potency for two years. Veterinarians should have supplies on hand for emergencies.

Specify "P. D. & Co." when ordering.

PARKE, DAVIS & CO.

RAMIRES-JONES PRINTING CO. BATON ROUGE, LA.